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Economic and Social Characteristics of the Hawaii Small Boat Pelagic Fishery

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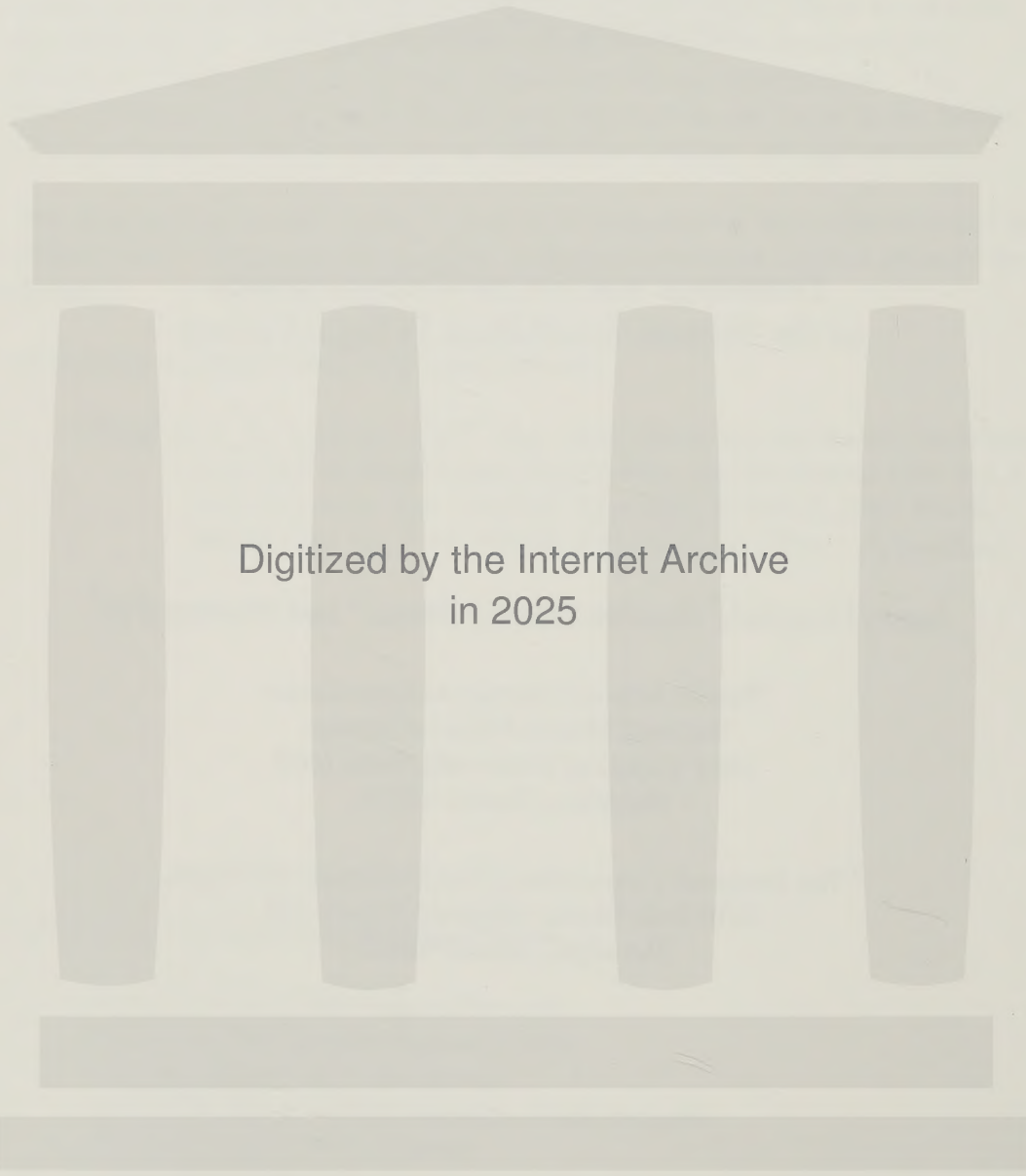
Economic and Social Characteristics
of the Hawaii Small Boat Pelagic Fishery

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EXECUTIVE SUMMARY

The development of effective fishery management policies requires knowledge of the biological, ecological, economic, and social implications of proposed management measures. This report presents an empirical snapshot of the economic and social characteristics of the Hawaii small boat pelagic fishery using results from a cost-earnings study of the fleet conducted in 2007–2008. Intercept surveys were carried out at boat ramps across the State of Hawaii and the instrument was fielded in two waves to capture seasonality within the fishery. A total of 343 interviews were completed. Using these data, we describe various characteristics of the fishery including fisher classification, levels of fishing activity, financial performance of the fleet, and social aspects of small boat fishing in Hawaii.

This research explores classification issues within the fishery by comparing self-classification results with reported behavior. While 42% of fishermen responding to our survey self-classified themselves as *commercial* fishermen, we found that 60% of respondents actually sold fish in the past 12 months. This would suggest a disconnection between Hawaii fishermen's attitudes and perceptions of their fishing behavior relative to existing regulatory frameworks. Just over 30% of fishermen who self-classified themselves as *recreational* indicated that they had sold fish in the past year. These findings have important implications for effective monitoring and management of this fishery in the future.

In regards to fishing activity, our survey respondents reported an average of 55 fishing trips in the past 12 months, with commercial fishers taking significantly more trips than noncommercial fishers. Commercial fishermen also reported spending more time out on the water per fishing trip. Detailed trip expenditure data showed that 66% of average pelagic trip expenditures can be attributed to fuel costs alone. The Hawaii small boat pelagic fishery is a mixed-gear fishery with 47% of fishers reporting the usage of more than one gear type in the past 12 months, and on average, fishermen in our sample reported that pelagic fish accounted for just over 80% of total pounds caught over the past 12 months. While the scale of fishing activity is closely related to commercial or noncommercial classification of the fisherman, we find no significant differences in trip-level expenditures across classifications.

Fishermen in Hawaii have varying degrees of market participation and access based on geographic constraints and their motivation for selling fish. The majority of fishermen responding to our survey reported selling fish simply to cover trip expenses, not necessarily to make a profit. Supporting this finding, commercial fishermen reported average gross revenues which covered variable trip expenses for the year, but few fishermen reported substantial, if any, profits associated with their fishing efforts. Our sample of commercial fishermen indicated that, on average, 19.1% of their personal income came from fishing, suggesting a moderate reliance on fishing as a livelihood.

In 2006, the Hawaii small boat pelagic fishery landed approximately 3.4 million pounds of pelagic fish earning revenues of approximately \$6.8 million. Most of this fish is sold to Hawai'i retail outlets and restaurants. However, a large amount of fish is not sold in markets, but provides food for local families and communities through personal consumption and fish-sharing networks. This research makes a first attempt at quantifying the scale of unsold fish entering communities. Based on our survey respondents, approximately 38% of pelagic fish caught by commercial fishermen is not sold (and by definition, 100% of noncommercial catch is not sold). While the scale varies by how the fisher is classified, 97% of fishers from our survey sample indicated that they participate in fish sharing networks with friends and relatives and more than 62% consider the fish they catch to be an important source of food for their family. Characterizing the small boat fishery as consisting of strictly commercial and recreational participants ignoring the cultural motivations towards fishing and reasons why fishermen sell fish may prove problematic in future management of this fishery.

The results detailed in this report provide an important baseline that will allow fishery managers to better understand how new fishery regulations and changing macroeconomic conditions may affect the financial performance and behavior of fishers. Based on evidence of high levels of heterogeneity within the Hawaii small boat pelagic fishery, it is clear that participants will respond in different ways to regulatory proposals, and failure to account for this may result in unintended consequences to management actions. This snapshot of the economic and social characteristics of the Hawaii small boat fishery will help managers make informed and sound policy decisions on future regulatory alternatives for this fishery.

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I. INTRODUCTION

The development of effective fishery management policies requires knowledge of the biological, ecological, economic, and social implications of proposed management measures. In response to the rising costs of fishing and increased regulation of fisheries in Hawaii, we thought it was appropriate to revisit the economic and social characteristics of pelagic small boat fishing in the State of Hawaii. Previous research on the small boat fleet by Hamilton and Huffman (1997) has become outdated by changes in macroeconomic conditions and does not represent the current environment of the fishery.

This report provides an empirical snapshot of the Hawaii small boat pelagic fishery using results from a cost-earnings study of the fleet conducted in 2007-2008. Using these data, we attempt to describe various elements of the fishery, including the complexities associated with fisher classification, measures of fishing activity, levels of financial investment, and social aspects of the fishery. The results of this study can provide fishery managers with a greater understanding of the current conditions of the Hawaii small boat pelagic fleet in an economic and social context, which is necessary for successful management of the fishery in the future.

II. METHODOLOGY, SAMPLE SUMMARY, AND DEMOGRAPHICS

Survey Questionnaire

We designed and fielded a survey questionnaire similar to the one used previously by Hamilton and Huffman (1997). The questionnaire focuses on vessel and operating characteristics, fixed and variable costs, estimates of catch, market participation and demographic information (see Appendix A). The most notable change from prior work was the addition of questions exploring social facets of the Hawaii small boat fishery. These questions were designed to improve our understanding of social and cultural aspects of the fishery, such as the percentage of fish consumed by families and shared amongst fishermen, neighbors, and friends. Additionally, we inquired as to whether fishermen considered the fish they caught to be an important source of food.

Sampling Strategy

Questionnaires were completed by interviewing fishermen during intercept surveys conducted at boat ramps across the State of Hawaii during 2007 and 2008. The questionnaire was fielded in two waves to capture periods of seasonality within the small boat fishery: a summer wave (April 2007 – July 2007), and a winter wave (November 2007 – March 2008). Approximately 71% of our completed interviews (243 out of 343) were collected during the summer wave. This period is the most popular fishing season in Hawaii, due to the prevalence of highly sought-after pelagics

concentrated in the waters surrounding the Hawaiian Islands. We used face-to-face interviews because, based on previous research in the fishery, it was found that mail, telephone, and web-based modes of survey administration would be inadequate to achieve desired response rates. Mail-back questionnaires employed in Hamilton and Huffman (1997) arrived at a response rate of just under 12%, while their corresponding in-person intercept mode received a response rate of approximately 77%. Additionally, McConnell and Haab (2001) received a response rate of just below 40% for a telephone-based survey within the small boat fishery.

The Hawaii small boat pelagic fleet is predominately owner-operated; 94% of fishers in our survey sample reported that they owned the boat they were fishing on. In a few instances, initial contact was made with a crew member and the surveyor was directed to the captain, who was almost always the owner. We found no significant difference in boat ownership between commercial and noncommercial fishers. In addition, we found very little sharing of vessels among fishers. In our sample, 82.2% of respondents indicated that their boat is never used without them on board (see Table 1). This information is important because it verifies that our survey respondents will be cognizant of vessel characteristics, levels of investment, and annual fixed costs.

Table 1. Do other people use this boat without you?

Response	Full sample
Percentage of respondents, by category	
Never	82.2
Sometimes	10.3
Rarely	5.9
Often	1.6

Target Population

Our target population was commercial small boat pelagic fishermen. We define small boats as motorized boats less than approximately 40 ft. We did not interview longline boats, aku boats, or charter boats. Longline boats were easy to avoid, as the fleet is moored across Honolulu Harbor and is comprised of vessels larger than 40 feet. Charter boats were not interviewed because most of their income is not derived from selling fish and their operations are significantly different than those of non-charter small boats. Additionally, there are only a handful of active aku boats, and again vessel characteristics clearly distinguish them from our small boat fleet. Efforts were made to capture both day and night fishing activity, and our sample consists almost entirely of single-day or single-night trips.

In 2006, approximately 1514 unique individuals (non-longline) held commercial marine licenses (CMLs) and reported trolling and/or pelagic handline catch in the State of Hawaii (Kokubun, R., pers. comm.). These fishermen reported approximately 28,897 days fished during 2006 (Western Pacific Regional Fishery Management Council, 2010).

Sampling Protocol Changes

While we initially fielded a randomized sampling scheme covering all seven days of the week, we implemented a change in survey protocols nearly four months into fieldwork. Other agencies were concerned that our survey efforts were interfering with existing data collection efforts designed specifically for the noncommercial sector of the fishery. To accommodate these concerns we altered our sampling strategy to limit fieldwork to the weekdays, under the assumption that there was reduced noncommercial effort during the week. Limiting our sampling to weekdays negatively affected our ability to achieve a more robust sample size, as fishing effort on the weekends is far greater. However, as shown in Table 2, we did not encounter a profound change in the makeup of our sample through the sampling changes.

Table 2. Effects of sampling protocol changes

Sampling Strategy	Dates	Percent of survey days	Percentage commercial
Original	April – July 2007	50.1	62.5
Modified (weekdays only)	November 2007 – March 2008	49.9	63.2

Sample Distribution (Spatial and Temporal)

Interviews were conducted at boat ramps across the State of Hawaii. While nearly every State-managed boat ramp was visited, the distribution of completed interviews is presented in Table 3. The distribution of sampling effort was based on frequency of usage, where the fish were biting, level of buy-in from local fishers, coordination to avoid other field workers/survey work, weather conditions, and local knowledge.

Table 3. Complete sampling scheme

County	Boat ramp (number of completed surveys)	Number of days sampled ¹
O'ahu ²	Wai'anae (86)	20
Number of days in field: 44	Hale'iwa (15)	3
Total completed surveys: 162	Hee'ia Kea (19)	9
	Keehi (8)	6
	Hawaii Kai (34)	9
Hawai'i	Honokōhau (31)	6
Number of days in field: 16	Keahou (24)	5
Total completed surveys: 76	Hilo (20)	7
	Hōnaunau (1)	1

¹ The number of days sampled, by county, may not be equal to the number of days in the field due to multiple field staff working multiple ramps on the same day.

² Officially, the island of O'ahu is designated as the City and County of Honolulu. However, for the sake of clarity in this report we refer to the City and County of Honolulu as O'ahu.

Kaua'i	Port Allen (19)	8
Number of days in field: 10	Nāwiliwili (32)	5
Total completed surveys: 59	Kīkīaola (8)	5
Maui	Kīhei (4)	2
Number of days in field: 12	Ma'alaea (1)	1
Total completed surveys: 46	Kahului (10)	4
	Mala (15)	4
	Kaunakakai (4)	2
	Manele Bay (12)	3

By comparing the spatial distribution of our sample to active pelagic (trolling and pelagic handline) CMLs by county, we can verify the spatial representativeness of our sample. As shown in Table 4, in 2006 the largest percentage of active pelagic fishers with CMLs were on the island of Hawai'i (42%), followed by O'ahu (33%), Maui (14%) and Kaua'i (11%). In looking at the makeup of the survey, we find that O'ahu is overrepresented, Kaua'i is slightly overrepresented, and the island of Hawai'i is underrepresented in our sample. This is largely a result of logistical considerations, but we do not consider this to be problematic for our analysis as we do not intend to extrapolate the sample survey results to the fishery population.

Table 4. Spatial distribution of active pelagic commercial marine licenses (2006) and survey sample

County	Number of active licenses ³	License distribution (%)	Survey response distribution (%)
O'ahu	495	33	47
Hawai'i	639	42	22
Kaua'i	166	11	17
Maui	214	14	13
Total	1,514	100	100

Response Rates

A total of 459 unique fishers were contacted in the field and surveys were completed by 343 of them, equating to a response rate of 74.7%, nearly equal to that of previous research in the fishery, which achieved a 77% response rate (Hamilton and Huffman, 1997). Interviewing effort and response rates varied across counties as indicated in Table 5. The highest response rate was obtained on Kaua'i with an estimated 86.8% response rate. On the other hand, the greatest interviewing effort (44 days) and lowest response rate (69.8%) were found on O'ahu.

³ Kokubun, R., pers. comm.

Table 5. Response rates, by county

County	Number of completed interviews (% of total sample)	Number of unique fishers contacted	Number of refusals (% of total sample)	Response Rate (%)
O'ahu	162 (47.2)	232	14 (6.0)	69.8
Hawai'i	76 (22.2)	99	3 (3.0)	76.8
Kaua'i	59 (17.2)	68	1 (1.5)	86.8
Maui	46 (13.4)	60	4 (6.7)	76.7
Total	343 (100.0)	459	22 (6.4)	74.7

Demographic Characteristics of Survey Respondents

This section details the demographic characteristics of our survey respondents. As we implemented a non-probabilistic sampling strategy, it is not our intention to project sample estimates to the population. We simply present the results based on our sample to provide a snapshot of the fishery, characterized by fisher behavior⁴ (i.e., those who sold fish are commercial, and those who did not sell fish are noncommercial).

Male fishers accounted for the overwhelming majority of our sample at 97.8%. Our average respondent was 45 years old (distribution of sample is presented in Table 7) with approximately 23.5 years of fishing experience in Hawaii. As shown in Table 6, we find that, on average, commercial fishers have more fishing experience in Hawaii (25.4 years) than noncommercial fishers (20.2 years) in our sample. Commercial fishers report an average of 16 years of commercial fishing experience in Hawaii. This commitment to fishing has important social and cultural implications for fishery managers to consider.

Table 6. Respondent characteristics: estimated means, standard error of the means, and medians

Variable		Full sample	Commercial	Noncommercial
Age of respondent (yrs)	Mean	45.3	45.4	45.0
	Standard error	0.7	0.8	1.2
	Median	45.0	45.0	46.0
Years fishing in Hawaii	Mean	23.5	25.4	20.2
	Standard error	0.8	0.9	1.4
	Median	20.0	25.0	20.0
Years fishing commercially	Mean		16.0	0.0
	Standard error		1.7	0.0
	Median		15.0	0.0

⁴ See Appendix A – Question 28

Table 7. Age distribution of survey respondents

Age	Full sample
Percentage of respondents, by category	
Less than 25 years	1.9
25 to 34 years	16.1
35 to 44 years	30.3
45 to 54 years	26.6
55 to 64 years	20.6
65 years or older	4.5

The largest ethnicity represented in our sample was Asian (46.7%), followed by White (23.2%), and Native Hawaiian or Pacific Islanders comprised 8.9% of our survey sample. Approximately 21.2% of our survey sample identified with the “Two or more races” ethnicity category, providing evidence of the rich cultural diversity of the islands. The distribution of our survey sample is presented in Table 8.

In relation to the general population for the State of Hawaii based on data from the 2006 American Community Survey (ACS) administered by the U.S. Census Bureau (DBEDT, 2009). In comparison to the general population of Hawaii, our survey sample is fairly representative, with the exception of a larger Asian representation.

Table 8. Ethnicity of survey sample, percentage

Response	Full sample	State of Hawaii 2006
Percentage of respondents, by category		
American Indian or Alaska Native	0.0	1.1
Asian	46.7	39.9
Black or African American	0.0	2.2
Native Hawaiian or Pacific Islander	8.9	8.7
White	23.2	26.3
Two or more races	21.2	21.5

Numerous respondents volunteered to further clarify their ethnicity as noted in Table 9. Given the diverse population of Hawaii, this additional information adds greater depth to the analysis of respondent ethnicity. Our sample (of which 64% identified a specific ethnic background) was predominantly made up of Japanese (36.1%), Caucasian (22.4%), Mixed – part Hawaiian (17.8%), and Filipino (10.5%), and we find similar results to that of Hamilton and Huffman (1997) with the exception of a larger percentage of our survey population identifying themselves as Caucasian.

Table 9. Ethnicity of respondents, refined

Response	Full Survey Sample	Hamilton and Huffman (1997)
Percentage of respondents, by category		
Japanese	36.1	32.9
Caucasian	22.4	12.3
Mixed, part-Hawaiian	17.8	15.8
Filipino	10.5	7.2
Hawaiian	5.9	4.6
Chinese	2.3	3.3
Mixed, non-Hawaiian	1.8	8.4
Other	1.8	8.4
Portuguese	1.4	2.6

For approximately 36% of survey respondents in our survey sample, the highest level of education attained was a high school degree. Likewise, 36.8% of fishermen reported completing some college or an Associates degree. Compared to the general population of the State of Hawaii, our sample was weighted in the middle of the educational spectrum with fewer Bachelors degree holders than the general population but more high school graduates than the general State population (DBEDT, 2009).

Table 10. Highest level of educational attainment

Response	Full sample	State of Hawaii 2006
Percentage of respondents, by category		
Less than high school	4.1	7.1
High school graduate	36.0	28.2
Some college or associate's degree	36.8	32.7
Bachelors Degree or higher	23.2	32.0

Most survey respondents indicated that they were employed full-time (77.4%), of which 13.5% are strictly full-time fishermen (see Table 11). Approximately 11.1% of fishers in our survey sample reported to be currently in retirement, while the remainder either work part-time or are self-employed.

Table 11. Employment status

Response	Full sample	Commercial	Noncommercial
Percentage of respondents, by category			
Full-time fishing	13.5	18.3	0.0
Full-time employed	63.9	59.6	76.0
Part-time employed	4.9	4.7	5.3
Retired	11.1	11.7	9.3
Unemployed	1.7	1.9	1.3
Other	4.9	3.8	8.0

While three-quarters of fishers in our sample indicated that they are employed full-time (either full-time fishing or full-time employed in other occupations), approximately 18.1% noted that they have taken time off from work, without pay, to fish. This sheds light on the opportunity costs associated with fishing.

Table 12. Percentage of respondents that have taken time off work, without pay, to fish

Response	Full sample	Commercial	Noncommercial
Percentage of respondents, by category			
Yes	18.1	17.4	20.0
No	50.4	45.6	64.0
Not applicable, full-time fisherman or self-employed	31.6	37.1	16.0

Household income for our survey sample is distributed similarly to the State of Hawaii income distribution based on the 2006 American Community Survey (ACS), as shown in Table 12, with the exception of the lower income categories (DBEDT, 2009). Based on our sample distribution, it would appear that the distribution of household income for fishers in our sample is scaled slightly upwards of the general population. This is in line with the capital investment requirements of owning a boat and the age distribution of our survey respondents.

Our sample distribution has bimodal peaks at approximately 26% and 22%, respectively, similar to the ACS, in the \$50,000 to \$75,000 and \$100,000 to \$149,000 income brackets. About 75% of respondents reported an annual household income greater than \$50,000. However, noncommercial fishers in our sample exhibit a slightly disproportionate number of individuals with a household income greater than \$200,000, nearly a threefold difference relative to commercial survey respondents.

Table 13. Household income of respondents, percentage by income category

Response	Full sample	Commercial	Noncommercial	State of Hawaii 2006
Percentage of respondents, by category				
Less than \$10,000	0.0	0.0	0.0	6.6
\$10,000 to \$14,999	0.0	0.0	0.0	3.9
\$15,000 to \$24,999	3.3	3.3	3.3	8.2
\$25,000 to \$34,999	7.1	6.6	8.2	8.3
\$35,000 to \$49,999	14.6	15.2	13.1	13.5
\$50,000 to \$74,999	25.5	26.5	22.9	19.9
\$75,000 to \$99,999	17.9	17.2	19.7	14.3
\$100,000 to \$149,999	22.2	23.2	19.7	15.5
\$150,000 to \$199,999	5.2	5.3	4.9	5.1
More than \$200,000	4.3	2.6	8.2	4.6

III. SURVEY RESULTS

Fisher Classification: Self-Classification and Behavior

The emergence of annual catch limit (ACL) management for United States' federally managed fisheries, mandated to be implemented by 2011, coupled with NOAA's policy to explore the use of 'catch shares' should bring fisher classification issues for the Hawaii small boat fishery to the forefront of management concerns in the near future. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) explicitly elucidates a legal definition for two distinct natures of fishing as follows:

Commercial fishing means "fishing in which the fish harvested, either in whole or in part, are intended to enter commerce or enter commerce through sale, barter, or trade" (MSA § 3 (4))

Recreational fishing means "fishing for sport or pleasure" (MSA § 3 (32))

Meanwhile, the State of Hawaii defines the following:

"Commercial purpose means the taking of marine life for profit or gain, or as a means of livelihood, when the marine life is taken in or outside of the State, and when the marine life is sold, offered for sale, landed, or transported for sale anywhere in the State" (State of Hawaii, 2011)

Because of the relative ease of market access, the fine lines drawn by the Federal definitions are often blurred in Hawaii. Existing legal definitions of commercial and recreational fishing are problematic because they do not accurately consider the cultural motivations of fishers towards fishing in Hawaii and may not be adequate in properly describing fishing activity, motivations, and attitudes. This makes it exceedingly difficult to classify fishermen, complicating management of the fishery. In addition, the cultural significance of fish in the diets of Hawaii residents and the appeal of eating fresh island fish to visitors means fishermen are readily able to sell catch to restaurants, markets, dealers/wholesalers and friends. The extent of market access and participation varies across fishermen, across trips, and even within a trip (Glazier, 2007; Miller, 2006).

While our survey targeted commercial fishers, in anticipation of screening difficulties we asked fishers to self-classify themselves early in the survey. Our self-classification question, *how would you define yourself as a fisherman*, helped us to better understand how fishers classify themselves in relation to their fishing behavior. As shown in Table 14, nearly 42% of our survey respondents self-identified themselves as commercial fishermen either full-time (9.3%) or part-time (32.6%). Another 46.9% identified themselves as recreational fishers, 10.5% indicated that they strictly fish for food, and 20.1% provided some other classification, such as 'weekend warrior' or 'lousy'. This does not add to 100% as fishermen were able to select multiple choices. Nearly 18% identified with multiple classifications, highlighting the complexities of defining fishermen in Hawaii.

Table 14. Self-classification results (percentage of full sample)

Response	Number of respondents (% of total sample)	
Respondents, by category		
Commercial	144	(41.9)
Full-time commercial	32	(9.3)
Part-time commercial	112	(32.6)
Recreational	161	(46.9)
Other, "Weekend Warrior"	72	(20.1)
Fish for food	36	(10.5)
Multiple Classifications	60	(17.5)

However, when we compare these self-classification results to fishing behavior as reported later on during the survey, we find that of the 343 completed surveys, 204 fishers (or approximately 60%) said that they had sold fish in the previous 12 months (Table 15), whereas 42% self-classified themselves as commercial fishers. This would suggest a disconnection between fishermen's attitudes and perceptions of their fishing behavior in relation to existing regulatory frameworks which has important implications for monitoring and managing this fishery.

Table 15. Number of fishers reporting selling fish in past 12 months

Response	Number of respondents (% of total sample)	
Respondents, by category		
Fishers that sold fish	204	(59.5)
Fishers that did not sell fish	139	(40.5)
Total	343	(100.0)

Approximately 37.4% of fishers that self-classified themselves as noncommercial fishers (recreational or other, "weekend warriors") reported selling fish, and thus according to the State of Hawai'i would be considered commercial for management purposes. Just over 30.4% of fishers who classified themselves as recreational fishers sold fish, whereas 57.1% of self-proclaimed other, 'weekend warriors' sold fish in the past 12 months. These results are presented below in Table 16.

Table 16. Fishers self-classified as noncommercial that sold fish in past 12 months

Self Classification	Number of respondents (% of noncommercial sample)	
Other, "Weekend Warrior"	28	(57.1)
Recreational	42	(30.4)
Total	70	(37.4)

Fishermen selling fish in the State of Hawaii are required to purchase a CML and are required to submit monthly catch reports to the State of Hawaii. In our sample, 60.9% of respondents reported owning a CML. Only 87.2% of fishermen who reported selling fish indicated that they own a valid CML.

Table 18. Own CML, by respondent

Response	Full sample	Sold fish	Did not sell fish
Percentage of respondents, by category			
Yes	60.9	87.2	14.0
No	38.2	12.3	84.2
Used to, but no longer	0.9	0.5	1.8

Historically, there have been no reporting requirements for noncommercial fishermen in the State of Hawaii. However, in 2007 a federal noncommercial permit, with reporting requirements, was established for fishermen that fish for bottomfish species in federal waters. There are still no reporting requirements for noncommercial pelagic fishing activity. Based on our survey sample, nearly 80.5% of noncommercial fishers reported that they do not keep a log of fishing activity. Additionally, 31.2% of fishers who reported selling fish in the past 12 months do not keep records outside of legally required monthly catch reports.

Table 19. Do you keep a log of catch, expenses, and/or fishing activity?

Response	Full sample	Sold fish	Did not sell fish
Percentage of respondents, by category			
Yes	50.0	68.1	19.5
No	50.0	31.2	80.5

The level of CML ownership in our survey sample (60.9%) is comparable with the percentage of fishers selling fish in our sample (59.5%). However, approximately 12.8% of fishermen acknowledged that they sold fish without a current CML. Approximately 14% of respondents that reported no sales of fish in the past 12 months (officially noncommercial and not required by law to report catch) stated that they hold a commercial marine license and meet monthly reporting requirements.

For the remainder of this report, we present results by fisher classification. If a fisher reported selling fish in the past 12 months, he/she is hereafter classified as *commercial*, whereas any survey respondent who did not sell fish in the past 12 months is hereafter considered *noncommercial*. This classification method seems most appropriate in the current management framework for the Hawai'i small boat fishery, and thus the results will be of greater practical use for fishery managers.

Furthermore, we employ the methodology of Hamilton and Huffman (1997) to further distinguish between full-time and part-time commercial fishers to provide additional insights into the commercial sector of the fishery. Specifically, if a fisher reported selling fish and noted that 50% or greater of their personal income came from fishing; he/she is classified as a full-time commercial fisher. Likewise, if a fisher reported selling fish, but indicated that less than 50% of their personal income came from fishing, they are defined for the purpose of this report as a part-time commercial fisher.

Characteristics of Sampled Boats

This section details the vessel characteristics of our survey respondents. Approximately 95% of our commercial fisher respondents trailered their vessels, while 100% of noncommercial fishers interviewed trailered their boats. Our respondent pool, based on intercept surveys at boat ramps, may be biased towards trailered vessels. This is a function of sampling protocols and is to be expected. Survey staff made efforts to contact moored vessels when occupied, but these opportunities were few and far between, mostly as a result of minimal activity from moored vessel owners and the significant distance between the moorings and wash-up stations in many boat harbors.

Our sample of the small boat fleet in Hawaii is relatively diverse, with boats ranging in size from around 12 feet upwards to 37 feet. The average boat in our survey sample was 22.5 feet long, 17.8 years old, and purchased in the late 1990s as the average years of boat ownership was 8.4 years. Commercial fishers in our sample had significantly larger boats than noncommercial fishers, but boat size between full-time and part-time commercial fishers were comparable.

Table 20. Vessel characteristics: means, standard error, minimums and maximums

Variable		Full sample	Commercial	Noncommercial
Total length of boat (feet)	Mean	22.5	23.0	20.9
	Standard error	0.3	0.3	0.5
	Minimum	12.0	13.5	12.0
	Maximum	37.0	37.0	34.0
Age of boat (years)	Mean	17.8	18.2	16.9
	Standard error	0.7	0.8	1.3
	Median	18.0	18.0	18.0
Current boat ownership (years)	Mean	8.3	8.9	6.5
	Standard error	0.5	0.6	1.0
	Median	6.0	7.0	3.0

As shown in Table 21, boat size varies across fisher motivations, with commercial fishers typically owning larger boats. While approximately 90% of commercial fishers in our sample own vessels 16 feet in length or greater, 50% of noncommercial fishers were fishing in boats less than 16 feet in length. Likewise, the distribution of vessel size is skewed towards larger vessels for full-time commercial fishers relative to part-time commercial fishers (see Table 21).

Table 21. Distribution of vessel size, by classification

Percentage of respondents	< 16 feet	16 – 24 feet	25 – 30 feet	> 30 feet
Full Sample	25.1	50.2	18.1	6.7
Commercial	10.2	56.9	23.6	9.3
Full-time commercial	4.0	53.2	27.7	22.5
Part-time commercial	11.8	57.9	22.5	7.7
Noncommercial	50.4	38.6	8.7	2.4

Fishing Activities

We asked numerous questions to explore behavioral and operational characteristics of the fishery. This section will describe various aspects of fishing activities for the Hawaii small boat pelagic fishery. Information detailed in this section includes trip frequency, trip length, gear usage, areas fished, and pounds caught.

Small boat fishermen in our sample took, on average, approximately 55 trips over the past 12 months, with commercial fishermen (67 trips) taking more trips than noncommercial fishermen (24 trips). Commercial fishermen also spent more time out on the water as the average trip for commercial fishers was approximately 9.9 hours long compared to an 8.2-hour trip for noncommercial fishers. Additionally, commercial fishers relied on smaller crews for their fishing trips.

Facilities to launch boats across the State of Hawai‘i are of varying degrees of quality and upkeep, with some ramps unsuitable for most users. On average, fishermen make use of two different boat ramps a year, although the range is from one to six. The average one-way distance travelled to launch one’s boat in the State of Hawai‘i is 14.6 miles.

Table 22. Fisher behavior: means, standard error, and medians

Variable		Full sample	Commercial	Noncommercial
Number of trips	Mean	55.0	67.0	24.0
	Standard error	3.0	4.0	2.0
	Median	36.0	48.0	20.0
Trip length (hours)	Mean	9.3	9.9	8.2
	Standard error	0.2	0.2	0.3
	Median	9.3	9.7	8.0
Number of people on board (including captain)	Mean	2.4	2.2	2.7
	Standard error	0.1	0.1	0.1
	Median	2.0	2.0	2.0
Average distance traveled to launch boat (miles, one-way)	Mean	14.6	15.6	12.9
	Standard error	0.8	1.0	1.1
	Median	10.0	11.0	9.0

If we refine the focus to our commercial sample, we are able to better explore scale considerations within the commercial sector and the fishery as a whole. Using our full-time and part-time commercial behavioral classifications, we see a stark contrast in terms of number of trips, trip length, and crew size indicated in Table 23. Full-time fishers take more trips, spend longer time on the water per trip, and typically carry a smaller crew as compared to part-time commercial fishers.

Table 23. Fisher behavior: means, standard error, and medians (commercial)

Variable		Full commercial sample	Full-time commercial	Part-time commercial
Number of trips	Mean	67.0	132.0	48.0
	Standard error	4.0	12.0	3.0
	Median	48.0	100.0	36.0
Trip length (hours)	Mean	9.9	11.2	9.7
	Standard error	0.2	0.7	0.2
	Median	9.7	10.6	9.7
Number of people on board (including captain)	Mean	2.2	1.9	2.3
	Standard error	0.1	0.1	0.0
	Median	2.0	2.0	2.0

On average, small boat pelagic fishermen in Hawaii use two gear types, predominantly trolling (for pelagic) and handline (for bottomfish), although as will be described shortly, there are diverse gears used across the Hawaii small boat pelagic fleet, and only 53.4% of our sample reported using only one gear type in the past 12 months (see Table 26). As evident in Table 24, trolling and bottomfish fishing are the two most commonly reported gear types for the Hawaii small boat pelagic fishery and combined, they comprise nearly 90% of trips by our survey respondents. Of these trips, nearly 70% of trips were trolling trips. The median percentage of trolling trips for our noncommercial sample survey was 90%. On average, commercial fishermen reported more effort expended in bottomfish fishing (22.4% of total trips) compared to noncommercial fishermen. This effort is, in large part, potentially a result of the high market value for bottomfish species as well as the cultural significance of these fish.

There are two gear types that are almost exclusively used by commercial fishermen, specifically *palu ahi* and *ika shibi*. The values in Table 24 do not necessarily add up to 100% because of the overlap of gear usage types across and within trips. Frequencies of reported gear usage on the day of survey interview are listed below in Table 25 and closely mirror the temporal distribution of our completed surveys. Frequencies of the second most common gear used for our survey respondents are listed in Table 26.

Table 24. Gear usage and trip types: means, standard error, and medians

Variable		Full sample	Commercial	Noncommercial
Number of different gear types used	Mean	2.2	2.3	2.1
	Standard error	0.0	0.0	0.0
	Median	2.0	2.0	2.0
Percentage of trips, Trolling	Mean	68.9	65.9	76.9
	Standard error	2.1	2.5	3.5
	Median	80.0	70.0	90.0
Percentage of trips, Bottomfish	Mean	19.5	22.4	11.3
	Standard error	1.8	2.2	2.4
	Median	1.0	5.0	0.0
Percentage of trips, Reef Fishing (including diving, spear fishing)	Mean	3.2	3.0	3.8
	Standard error	0.8	0.9	1.8
	Median	0.0	0.0	0.0

Variable		Full sample	Commercial	Noncommercial
Percentage of trips, Akule/Opelu	Mean	4.7	5.2	3.6
	Standard error	1.1	1.3	1.7
	Median	0.0	0.0	0.0
Percentage of trips, Palu Ahi*	Mean	3.8	5.0	0.4
	Standard error	0.9	1.2	0.4
	Median	0.0	0.0	0.0
Percentage of trips, Ika Shibi*	Mean	1.2	1.6	0.0
	Standard error	0.5	0.6	0.0
	Median	0.0	0.0	0.0
Percentage of trips, mixed gear	Mean	3.7	5.3	0.9
	Standard error	0.9	1.5	0.8
	Median	0.0	0.0	0.0

Table 25. Gear usage on survey day, by respondent

Gear type	% of sample
Percentage of respondents, by category	
Pelagic Trolling	75.2
Handline for pelagics	7.9
Handline for bottomfish	6.7
Reef Fishing	4.9
Akule / Opelu	0.6
Palu ahi	1.8
Ika Shibi	0.3
Non Fishing	2.6

Table 26. Second most common gear usage by respondent

Gear type	% of sample
Percentage of respondents, by category	
Handline for bottomfish	26.8
Pelagic Trolling	6.1
Reef Fishing	6.1
Palu Ahi	3.8
Akule / Opelu	2.0
Ika Shibi	0.6
Handline for pelagics	0.6
Mixed gear	0.6
None, only one gear type used	53.4

To explore distance travelled by commercial and noncommercial fishermen within the fishery, we asked fishers to generalize their fishing location by calculating a maximum and average distance fishing offshore. These results are presented in Table 27. On average, for a pelagic trip, our survey respondents fished 11.1 miles offshore with a maximum distance of 16 miles, suggesting that many fishers are utilizing offshore fish aggregating devices (FADs) located in Federal waters surrounding the State of Hawai'i. Likewise, the average non-pelagic trip distance was 7.2 miles offshore, with a maximum of 10.1 miles, suggesting offshore banks in Federal waters were the ideal fishing locations for non-pelagics (primarily bottomfish). However, this mean is likely biased

due to our overrepresentation of O‘ahu fishermen. The median non-pelagic trip was 2 miles; therefore, half our sample sought non-pelagics in State waters. Commercial fishers fished farther offshore for pelagics and non-pelagics, both in terms of maximum distance offshore and on average. Compared to part-time commercial fishermen, full-time commercial fishers reported fishing a greater maximum distance offshore for non-pelagics and, on average, fished farther offshore on pelagic trips (see Table 28).

Table 27. Distance fished offshore: means, standard errors, and medians

Variable		Full sample	Commercial	Noncommercial
Average distance offshore, pelagic trip	Mean	11.1	12.9	8.2
	Standard error	0.5	0.7	0.7
	Median	10.0	10.0	5.0
Maximum distance offshore, pelagic trip	Mean	16.0	18.9	11.2
	Standard error	0.8	1.1	0.9
	Median	13.0	16.0	10.0
Average distance offshore, non-pelagic trip	Mean	7.2	8.4	3.4
	Standard error	1.1	1.4	1.3
	Median	2.0	2.0	1.0
Maximum distance offshore, non-pelagic trip	Mean	10.1	12.6	5.8
	Standard error	1.6	2.0	1.9
	Median	3.0	3.0	2.0

Table 28. Distance fished offshore: means, standard errors, and medians (commercial)

Variable		Full commercial sample	Full-time commercial	Part-time commercial
Average distance offshore, pelagic trip	Mean	12.9	15.2	12.7
	Standard error	0.7	1.6	0.8
	Median	10.0	15.0	10.0
Maximum distance offshore, pelagic trip	Mean	18.9	21.7	18.7
	Standard error	1.1	2.1	1.3
	Median	16.0	20.0	15.0
Average distance offshore, non-pelagic trip	Mean	8.4	11.6	6.9
	Standard error	1.4	3.7	1.3
	Median	2.0	4.8	2.0
Maximum distance offshore, non-pelagic trip	Mean	12.6	22.2	8.0
	Standard error	2.0	5.2	1.4
	Median	3.0	20.0	2.5

A summary of spatial fishing behavior is presented in Table 29. Using reported average fishing locations, we find that spatial patterns of effort vary based on fisher classification. These findings have important implications for management of the Hawaii small boat pelagic fishery. The results indicate the inherent difficulty of managing a fishery with overlapping jurisdictional authorities (Federal and State).

Table 29. Summary of distance fished offshore, percentage of sample by classification

	Full-time commercial	Part-time commercial	Noncommercial
Pelagic fishing			
State waters (< 3 miles)	0%	5%	17%
Federal waters (3+ miles)	100%	95%	83%
Non-pelagic fishing			
State waters (< 3 miles)	28%	51%	62%
Federal waters (3+ miles)	72%	49%	38%

Table 30 presents catch estimates based on fishers' responses to our survey. As one may expect, the scale of fishing activity varied greatly across fisher classifications. The total catch values presented are a composite of two survey questions that asked about pelagic pounds caught and non-pelagic pounds caught. To reduce recall bias, respondents were given an option to provide an average monthly catch, as this aligns with commercial reporting requirements, and interviewers followed up with verification questions regarding the number of months fished and seasonal variability.

The average total pounds caught reported over the past 12 months was 5085 pounds and the median was 1200 pounds. Five respondents indicated that they had caught zero fish over the past 12 months. Table 30 shows that the number of fish caught by commercial fishermen is far greater than that of noncommercial fishermen. Not surprisingly, pelagic fish made up an overwhelming majority of total fish caught, 81.5% of total reported pounds caught. While commercial fishermen clearly reported a larger amount of non-pelagic catch as compared to noncommercial fishers, the contribution of non-pelagic fish to an individual's total pounds caught is not significantly different between classifications. Due to rounding, the reported pelagic and non-pelagic pounds caught may not necessarily add up to total pounds caught.

Table 30. Pounds caught in past 12 months: means, standard errors, and medians

Variable		Full sample	Commercial	Noncommercial
<i>Annual pounds caught</i>				
Total pounds caught	Mean	5,085	7,513	760
	Standard error	594	875	118
	Median	1,200	2,910	480
Pelagic pounds	Mean	4,147	6,167	633
	Standard error	529	793	99
	Median	1,000	2,000	300
Non-pelagic pounds	Mean	896	1,337	119
	Standard error	214	332	26
	Median	30	100	12
<i>Trip-level pounds caught</i>				
Pounds per trip	Mean	94	117	36
	Standard error	8	11	5
	Median	48	66	22
Pounds, pelagic trip	Mean	134	163	57
	Standard error	11	14	8

	Median	80	100	33
Pounds, non-pelagic trip	Mean	28	32	17
	Standard error	6	9	6
	Median	11	13	6

Table 31 illustrates the varying levels of effort expended by the commercial side of the Hawaii small boat pelagic fishery. As one would expect, full-time commercial fishers reported considerably larger amounts of fish caught and, subsequently, a significantly larger per-trip haul. These findings are supportive of earlier results of significantly more trips taken by full-time commercial fishers and, in general, larger capacity on their vessels. Additionally, our estimates within the full-time commercial classifications exhibited a fair amount of variation as indicated by the relatively large standard errors.

Table 31. Pounds caught in past 12 months: means, standard errors, and medians

Variable		Full commercial sample	Full-time commercial	Part-time commercial
<i>Annual pounds caught</i>				
Total pounds caught	Mean	7,513	27,336	4,347
	Standard error	875	5,114	555
	Median	2,910	18,720	2,000
Pelagic pounds	Mean	6,167	23,767	3,486
	Standard error	793	5,080	412
	Median	2,000	10,800	1,500
Non-pelagic pounds	Mean	1,337	3,603	844
	Standard error	332	906	349
	Median	100	650	70
<i>Trip-level pounds caught</i>				
Pounds per trip	Mean	117	198	92
	Standard error	11	29	11
	Median	66	109	52
Pounds, pelagic trip	Mean	163	255	136
	Standard error	14	37	15
	Median	100	200	87
Pounds, non-pelagic trip	Mean	32	58	23
	Standard error	9	30	5
	Median	13	8	15

According to the State of Hawai'i Fisher Reporting System's (FRS) 2006 data, approximately 3.4 million pounds were caught as a result of 32,474 trolling and pelagic handline trips made, which equates to an estimated 105 pounds per trip (Western Pacific Regional Fishery Management Council, 2010). This number is similar to our full sample average of 134 pounds per pelagic trip (Table 30). If we consider only our commercial sample, as the FRS is the only representative of commercial fishing in Hawai'i, our estimate of 163 pounds per trip is also comparable, especially when we consider unsold portions of catch within the fishery which are detailed later in the section on social aspects of fishing.

As shown in Figure 1, the distribution for total pounds caught for our survey sample is fairly representative of the reported activity in the fishery for 2006. However, this should merely be considered for the sake of comparison, as our sample overlaps the 2006 and 2007 fishing seasons. Additionally, the FRS only includes those with active CMLs and those that report their fishing effort. Our sample is comprised of a portion of unlicensed, noncommercial fishers who are not required to report their fishing effort to the State of Hawai'i, and it is possible that avidity and recall bias associated with the manner in which we conducted our survey, is evident in our survey sample.

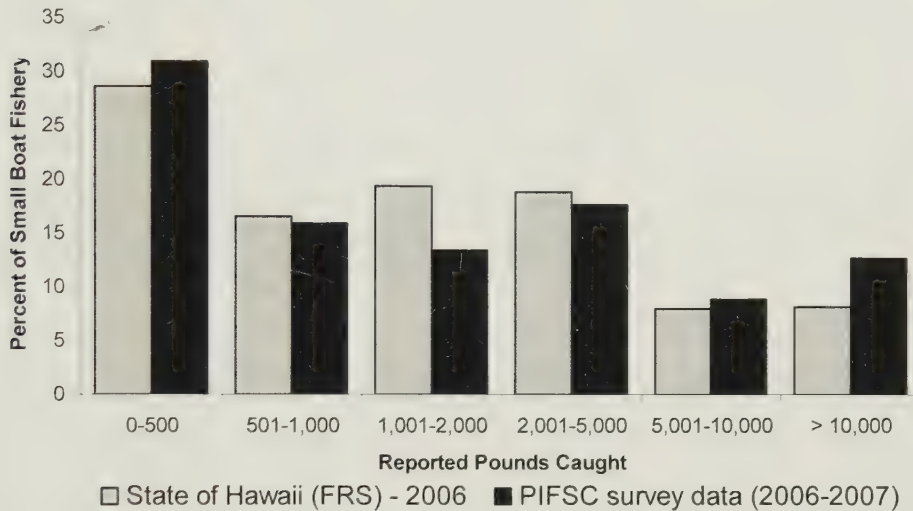


Figure 1. Distribution of total pounds caught, State of Hawaii and full survey sample

Market Access and Participation

As noted a few times already, trip motivation of fishers and manner of classifying their trips are complex issues in the Hawai'i small boat fishery. Often, the motivations for a trip and the actual trip disposition can be vastly different. A noncommercial trip can quickly become a commercial venture if one encounters a large school of pelagics or if trip costs incurred run high for the day. To gain a better understanding of trip disposition, we asked fishermen to describe the final outcome of their trips over the past 12 months.

For commercial fishermen, while *sell fish and simply cover expenses* was the most common outcome (35.1%), trips where no fish are sold (30.5%) are nearly equal to trips where profit is made (30.9%). A small portion of the fishery uses their boats for non-fishing purposes as well (see Table 32), and the relationship of fishing to boat ownership will be explored later in this report.

Table 32. Fisher trip disposition: means, standard errors, and medians

Variable		Full sample	Commercial	Noncommercial
Percentage of trips				
Sold fish for profit	Mean	22.5	30.9	0.0
	Standard error	1.9	2.4	0.0
	Median	0.0	24.0	0.0
Sold fish to cover expenses	Mean	25.5	35.1	0.0
	Standard error	15.0	2.3	0.0
	Median	0.0	30.0	0.0
Did not sell any fish	Mean	47.9	30.5	94.6
	Standard error	2.6	2.6	2.7
	Median	50.0	20.0	100.0
Non-fishing trip	Mean	4.1	3.5	5.4
	Standard error	0.7	0.8	1.6
	Median	0.0	0.0	0.0

Because of fishing motivation, it is not surprising that full-time commercial fishers reported a significantly larger percentage of trips where trip revenues exceeded trip costs (Table 33). Additionally, full-time commercial fishers reported significantly less trips that resulted in no fish being sold.

Table 33. Fisher trip disposition: means, standard errors, and medians (commercial)

Variable		Full commercial sample	Full-time commercial	Part-time commercial
Percentage of trips				
Sold fish for profit	Mean	30.9	61.1	21.9
	Standard error	2.4	5.0	2.3
	Median	24.0	70.0	10.0
Sold fish to cover expenses	Mean	35.1	31.9	36.1
	Standard error	2.3	4.7	2.5
	Median	30.0	25.0	33.0
Did not sell any fish	Mean	30.5	4.1	38.3
	Standard error	2.6	2.1	2.9
	Median	20.0	0.0	30.0
Non-fishing trip	Mean	3.5	2.9	3.7
	Standard error	0.8	1.3	0.9
	Median	0.0	0.0	0.0

To generalize the outcome of fishing trips based on vessel size we find the incidence of selling fish increases greatly as vessel size increases (Table 34). This result corresponds to the relationship of fisher classification and vessel size.

Table 34. Sell fish by size of boat

Response	Sell fish	Do not sell fish
Percentage of respondents, by category		
Less than 16 feet	25.6	74.4
16 feet – 24 feet	66.1	33.9
25 feet – 30 feet	81.9	18.1
Greater than 30 feet	82.6	17.4

As noted in Table 33, the outcome of a fishing trip is highly variable within the Hawai'i small boat fishery. In terms of market participation, commercial fishermen reported selling approximately 58% of the pelagic fish caught and 35% of non-pelagic fish in the past 12 months. By definition, noncommercial fishers did not sell any fish, leaving a sizable portion of fish not entering traditional market channels. The social aspects of the fishing section in this report will further detail the disposition of this unsold fish. Based on total pounds caught, our commercial sample sold, on average, approximately 6384 pounds of pelagic fish and 1347 pounds of non-pelagic fish over the past 12 months. Full-time commercial fishermen sold a significantly larger amount of both pelagics and non-pelagics compared to part-time commercial fishermen (see Table 35).

The average gross revenue was \$13,422, with the median fisherman grossing \$5,000 from selling fish in the past 12 months. At the trip level, this equates to approximately \$191 per trip. Commercial fishermen reported that approximately 19.1% of their personal income comes from fishing, while just over 15% of their household income is fishing dependent. This finding indicates the economic importance of fishing to the many small boat fishermen of Hawai'i. In addition to the social significance of over half a lifetime of fishing experience, it is evident that commercial fishers have forged livelihoods moderately reliant on fishing (Table 6).

Significant differences between full-time and part-time commercial fishermen are aligned with expectations, as full-time commercial fishermen participated much more in the market than part-time commercial fishermen in all the variables listed in Table 35.

Table 35. Market participation in past 12 months: means, standard errors, and medians

Variable		Full commercial sample	Full-time commercial	Part-time commercial
Percentage of fish sold, Pelagic	Mean	58.1	76.2	52.8
	Standard error	2.4	4.6	2.6
	Median	70.0	90.0	50.0
Percentage of fish sold, non-pelagic	Mean	34.9	79.4	27.7
	Standard error	2.9	4.9	3.1
	Median	0.0	95.0	0.0
Pounds Sold, pelagic	Mean	6,384	19,764	2,390
	Standard error	1,120	4,110	347
	Median	1,287	9,200	684
Pounds Sold, non-pelagic	Mean	1,347	3,342	717
	Standard error	336	828	341
	Median	0	500	0
Gross revenue (dollars)	Mean	13,422	36,518	6,173
	Standard error	1,614	5,073	628
	Median	5,000	35,000	3,000
Gross revenue per trip	Mean	191	343	138
	Standard error	18	53	14
	Median	106	202	83
Average Price (all fish)	Mean	2.14	2.55	2.01
	Standard error	0.23	0.49	0.26
	Median	1.27	1.65	1.25
Percent of personal income from fishing	Mean	19.1	68.3	4.2
	Standard error	2.5	5.5	0.7
	Median	0.5	80	0
Percent of household income from fishing	Mean	15.0	60.5	3.5
	Standard error	2.5	6.6	0.7
	Median	0.0	80.0	0.0

According to the 2006 State of Hawai‘i Dealer Database⁵ data, the Hawai‘i small boat pelagic fishery (troll and handline) was valued at approximately \$6.8 million, with a reported 32,474 trips, arriving at an estimate average revenue per trip of \$209.39 (Western Pacific Regional Fishery Management Council, 2010). Our commercial sample reported average revenues per trip of \$191, with considerable scale differences based on fishery participation. Full-time commercial fishers reported an average gross per trip revenue of \$343 compared to part-time commercial counterparts with an average of \$138 per trip (see Table 35). We calculate the average price⁶ received by commercial fishers and arrive at a value of \$2.14 per pound. This compares well with fishery averages of \$2.53 for trolling trips and \$2.16 for pelagic handline trips in 2006 (Western Pacific Regional Fishery Management Council, 2009). The distribution of gross revenues for our sample and the 2006 fishery as a whole is presented in Figure 2. As noted earlier, on average, our sample reported higher revenues than the general population of the

⁵ All fish sales transactions (species, pounds sold, value) are reported to the State of Hawaii by fish buyers (dealers)

⁶ We did not specifically ask for average price; we calculated this estimate simply by dividing total revenue by total pounds sold.

commercial fishery, and the distribution is weighted towards the higher end of the distribution. This is likely a result of avidity bias, and potential recall and additivity bias associated with the overlap of 2 calendar years for this analysis.

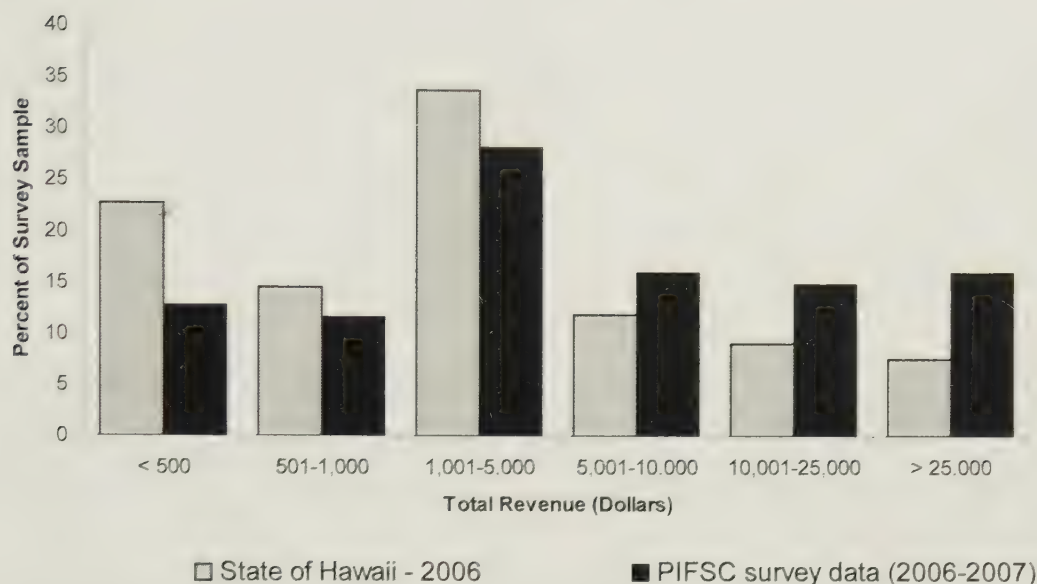


Figure 2. Distribution of gross revenues, State of Hawaii and commercial sample

Because of the high demand for fresh fish in Hawaii, fishers have a number of outlets available for selling their catch. These outlets include the United Fishing Agency (UFA) auction in Honolulu, dealers/wholesalers, markets/stores, restaurants, roadside, and sales to friends/neighbors/coworkers. Survey respondents reported using one major outlet and occasionally a secondary outlet with the maximum of 3 *types* of market sources. The major difference between full-time and part-time commercial fishers is that full-time commercial fishers more often utilize markets and stores. Additionally, part-time commercial fishers sell quite often to friends, neighbors, or coworkers compared to full-time commercial fishers who did not seem to utilize this market channel.

Table 36. Market Disposition, by percentage of respondents using outlet

Response	Full commercial sample	Full-time commercial	Part-time commercial
Percentage of respondents, by category			
Auction (Honolulu)	37.7	40.4	36.9
Dealer/Wholesaler	27.5	23.4	21.0
Market/Store	21.6	42.6	22.9
Restaurant	21.1	23.4	20.4
Friends/neighbors/coworkers	17.6	0.0	20.4
Roadside Sales	2.4	2.1	2.5
Other	1.5	2.1	1.3

Table 37. Market distribution: means and standard errors

Variable		Pelagic	Non-pelagic
Percentage of pounds sold, by outlet			
Auction (Honolulu)	Mean	37.5	34.7
	Standard error	3.4	6.3
Dealer/wholesaler	Mean	17.2	16.1
	Standard error	2.7	4.9
Markets/stores	Mean	16.3	22.8
	Standard error	2.4	5.5
Restaurants	Mean	14.8	12.1
	Standard error	2.4	4.3
Friends/neighbors/coworkers	Mean	13.1	10.7
	Standard error	2.3	4.2
Roadside sales	Mean	0.9	1.8
	Standard error	0.6	1.8

If one looks at the county level, differences in market access become apparent as the distribution in market utilization varies across counties (Table 38). The most common outlet on O'ahu is the UFA fresh fish auction, with 81% of survey respondents indicating that they had sold fish to the auction in the past 12 months. In fact, approximately 59% of our O'ahu sample utilized the Honolulu auction as their sole market outlet. However, with the exception of 5% of Kaua'i fishermen, the auction is not used often by neighbor island fishermen. The next most common market outlets on O'ahu are markets/stores and friends/neighbors/coworkers. On Hawai'i, dealers/wholesalers are the most common market outlet, followed by direct sales to markets/stores, and friends. Maui and Kaua'i fishermen, however, sell primarily to restaurants, perhaps as a result of the structure of the tourism industry for these counties, followed in frequency by selling to dealers/wholesalers and markets/stores. The dealer and wholesaler market channel on Hawai'i, Maui, and Kaua'i appears to play a more pivotal role in fish distribution compared to O'ahu where dealers and wholesalers typically buy their fish from the auction rather than directly from the fishermen.

Table 38. Market Disposition, by percentage of respondents using outlet

Response	Full sample	Hawai'i	Maui	O'ahu	Kaua'i
Percentage of respondents, by category					
Auction (Honolulu)	37.7	0.0	0.0	80.6	5.1
Dealer/Wholesaler	27.5	50.0	20.0	1.1	33.3
Market/Store	21.6	40.4	30.0	18.3	30.8
Restaurant	21.1	11.5	70.0	6.5	43.6
Friends/neighbors/coworkers	17.6	17.3	20.0	13.9	25.6
Roadside Sales	2.5	0.0	5.0	2.2	5.1
Other	2.0	1.9	0.0	3.2	2.6

We have shown that market participation varies by fisher classification and geography. We were interested in obtaining a better understanding of market relationships that fishers have established. As shown in Table 39, fishers make attempts at diversifying their market outlets, either by choice or necessity. While a majority of our fishers (58.8%) report always selling to the same place, this is disproportionately representative

of O‘ahu, where 77.8% of fishers use a sole source. Fishers from the neighbor islands are less likely to be tied to a single buyer.

Table 39. Do you always sell your fish to the same place?

Percentage of respondents	Yes	No
<i>Classification</i>		
Full Commercial Sample	58.8	41.2
Full-time commercial	58.7	41.3
Part-time commercial	58.9	41.1
<i>County</i>		
Hawai‘i	40.4	59.6
Maui	33.3	66.6
O‘ahu	77.8	22.2
Kaua‘i	51.3	48.7

As 58.8% of our commercial fishers indicated that they always sell to the same place, it is interesting to note that only 36.8% feel that they receive a fair price for the fish they sell (Table 10). This value is inversely proportional to reliance on fishing as full-time commercial fishers expressed a low (25.7%) satisfaction with fish prices compared to 40.4% for part-time commercial fishers.

Interestingly, while fishers from O‘ahu overwhelmingly utilize a single buyer (see Table 39) they also express the highest level of dissatisfaction with the prices they receive. Approximately 45.5% of fishers from O‘ahu report that they do not feel that they receive a fair price for the fish they sell (Table 40). Likewise, fishers on Hawai‘i have the lowest percentage of *yes* responses to this question (29.8%). One may also notice the higher proportion of *yes* responses on Maui and Kaua‘i, both counties that rely on sales directly to restaurants which may suggest that buyers for these counties have established more positive relationships with fishers.

Table 40. Do you feel that you receive a fair price for the fish you sell?

Percentage of respondents	Yes	No	Sometimes	Don't know or other
<i>Classification</i>				
Full Commercial Sample	36.8	43.1	15.9	4.2
Full-time commercial	25.7	60.0	11.4	2.9
Part-time commercial	40.4	37.6	17.4	4.6
<i>County</i>				
Hawai‘i	29.8	42.6	21.3	6.4
Maui	47.4	42.1	10.5	0.0
O‘ahu	36.4	45.5	16.4	1.8
Kaua‘i	47.8	39.1	8.7	4.4

One would think that fishers would seek alternate outlets for their fish in an effort to earn higher prices, especially if dissatisfied. However, an explanation for this seemingly contradictory finding becomes clear when looking at reported motivations for selling fish.

A majority of commercial fishers reported selling their fish *simply to recover trip expenses*, not necessarily to *make income*. Additionally, the convenience of selling their fish to established market connections may outweigh the search costs associated with seeking out alternate outlets to sell fish, or it could be that there are simply no outlets available that meet the price expectations fishermen hold.

At the county level, our findings are relatively consistent with the statewide findings. Fishermen on Hawai'i and Maui expressed that they were slightly more commercially motivated compared to fishers on O'ahu and Kaua'i. Likewise, a majority of fishers on O'ahu and Kaua'i simply sell fish to cover expenses.

Table 41. Primary Motivation for selling fish (percentage)

Percentage of respondents	Make profit	Cover costs	Both / Depends	Don't know or other
<i>Classification</i>				
Full Commercial Sample	28.6	56.2	14.8	0.5
Full-time commercial	69.6	10.9	19.6	0.0
Part-time commercial	16.7	69.4	13.4	0.6
<i>County</i>				
Hawai'i	33.9	47.2	18.9	0.0
Maui	30.0	45.0	25.0	0.0
O'ahu	26.1	60.9	11.9	1.1
Kaua'i	26.3	63.2	10.5	0.0

Trip Costs

A common concern expressed by fishermen is that they are finding it increasingly difficult to simply cover trip costs (see Table 41). This section presents a detailed look at the cost structure of the average fishing trip for the Hawaii small boat pelagic fishery. We present the variable cost breakdown for both pelagic and non-pelagic fishing trips.

The majority of boats (59.3%) used gasoline fuel compared to diesel (40.7%). This varied across classification as commercial fishermen were distributed nearly evenly between gasoline (53.6%) and diesel (46.4%), while noncommercial vessels overwhelmingly relied on gasoline engines (74.6%).

Table 42. Type of fuel used

Percentage of respondents	Gasoline	Diesel
<i>Classification</i>		
Full survey sample	59.3	40.7
Commercial Sample	53.6	46.4
Full-time commercial	40.5	59.5
Part-time commercial	57.6	40.5
Noncommercial	74.6	25.4

During our fieldwork, the average pelagic trolling trip cost \$169.03. As one might expect, fuel expenses were the largest percentage of variable trip costs. The average fisher spent approximately \$99.98 on boat fuel and \$14.86 for truck fuel; leading fuel costs to account for 66% of total trip expenditures (see Table 43 and Fig. 3). Ice was the next largest component of trip expenditures, with \$18.74 spent per trip. Following ice expenses, food and beverage costs were approximately \$17.99 per trip. Daily maintenance and repair, bait, and oil are additional components to the variable trip cost structure for small boat pelagic fishers. While commercial fishers spent a higher amount on ice per trip as compared to noncommercial fishers, we find little difference in the pelagic trolling cost structure between commercial and noncommercial fishers.

Table 43. Pelagic fishing trip costs: means, standard errors, and medians

Variable		Full Sample		Commercial		Noncommercial	
		\$ per trip	% of total trip cost	\$ per trip	% of total trip cost	\$ per trip	% of total trip cost
Boat Fuel	Mean	99.98	57.8	99.23	55.5	101.63	64.8
	Standard error	3.68		3.99		8.47	
	Median	95.50		96.00		92.00	
Truck Fuel	Mean	14.86	8.6	15.31	8.6	13.63	8.7
	Standard error	0.72		0.84		1.38	
	Median	10.00		11.16		10.00	
Oil	Mean	2.28	1.3	1.89	1.1	3.35	2.1
	Standard error	0.69		0.87		0.94	
	Median	0.00		0.00		0.00	
Ice	Mean	18.74	10.8	20.89	11.7	13.08	8.3
	Standard error	1.18		1.44		1.82	
	Median	20.00		20.00		10.00	
Bait	Mean	7.39	4.3	8.46	4.7	4.43	2.8
	Standard error	1.01		1.31		1.18	
	Median	0.00		0.00		0.00	
Food and Beverage	Mean	17.99	10.4	17.80	9.9	18.54	11.8
	Standard error	0.97		1.05		2.23	
	Median	18.00		15.00		18.00	
Daily Maintenance and Repair	Mean	7.79	4.5	10.16	5.7	1.35	0.9
	Standard error	3.40		4.63		0.66	
	Median	0.00		0.00		0.00	
Total Trip Cost	Mean	169.03	100	173.74	100	156.01	100
	Standard error	6.71		8.30		10.23	
	Median	147.50		150.00		138.00	

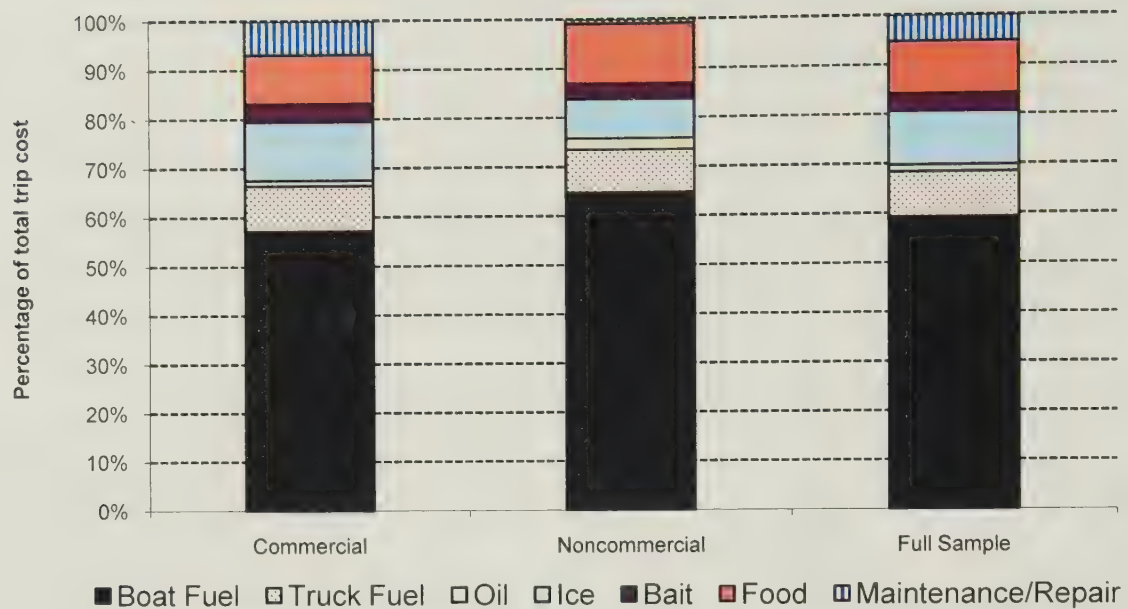


Figure 3. Cost structure for pelagic trip

Table 44. Pelagic fishing trip costs: means, standard errors, and medians (commercial)

Variable		Full commercial sample		Full-time commercial		Part-time commercial	
		\$ per trip	% of total trip cost	\$ per trip	% of total trip cost	\$ per trip	% of total trip cost
Boat Fuel	Mean	99.23	55.5	116.17	54.4	97.63	56.5
	Standard error	3.99		13.63		4.86	
	Median	96.00		100.00		90.00	
Truck Fuel	Mean	15.31	8.6	14.29	6.7	15.62	9.0
	Standard error	0.84		1.67		0.98	
	Median	11.16		10.00		13.50	
Oil	Mean	1.89	1.1	0.40	0.1	2.35	1.4
	Standard error	0.87		0.19		1.13	
	Median	0.00		0.00		0.00	
Ice	Mean	20.89	11.7	26.46	12.4	19.39	11.2
	Standard error	1.44		3.53		1.55	
	Median	20.00		25.00		20.00	
Bait	Mean	8.46	4.7	13.68	6.4	7.31	4.2
	Standard error	1.31		3.64		1.33	
	Median	0.00		0.00		0.00	
Food and Beverage	Mean	17.80	9.9	18.95	8.9	17.69	10.2
	Standard error	1.05		2.34		1.21	
	Median	15.00		15.00		16.50	
Daily Maintenance and Repair	Mean	10.16	5.7	23.41	10.9	6.03	3.5
	Standard error	4.63		17.39		2.81	
	Median	0.00		0.00		0.00	
Total Trip Cost	Mean	173.74	100	213.36	100	166.02	100
	Standard error	8.30		25.56		8.62	
	Median	150.00		158.00		146.00	

Alternatively, many pelagic fishermen in our sample (see Table 24) also engage in non-pelagic fishing (bottomfish, reef fish, etc.). The average non-pelagic trip during our sample period cost \$134.79. The difference between pelagic and non-pelagic fishing is that non-pelagic fishing is a much less fuel-intensive style of fishing. In comparison to trolling, fuel accounts for only 57% of variable trip costs (see Table 45 and Fig. 4). The average fisher spent approximately \$65.40 on boat fuel and \$14.17 for truck fuel. Ice was the next largest component of trip costs, with \$18.14 spent per trip. Following ice expenses, food and beverage costs were approximately \$17.67 per trip. Daily maintenance and repair, bait, and oil are additional components to the variable trip cost structure for small boat fishers.

Table 45. Non-pelagic fishing trip cost: means, standard errors, and medians

Variable		Full Sample		Commercial		Noncommercial	
		\$ per trip	% of total trip cost	\$ per trip	% of total trip cost	\$ per trip	% of total trip cost
Boat Fuel	Mean	65.40	46.9	67.91	47.3	52.27	47.4
	Standard error	5.00		5.72		5.76	
	Median	45.50		50.00		37.50	
Truck Fuel	Mean	14.17	10.2	14.61	10.2	13.94	12.6
	Standard error	1.00		1.11		1.28	
	Median	10.50		13.50		15.00	
Oil	Mean	0.74	0.5	0.64	0.4	1.39	1.3
	Standard error	0.19		0.19		0.39	
	Median	0.00		0.00		0.00	
Ice	Mean	18.14	13.0	18.48	12.9	13.95	12.7
	Standard error	2.51		2.45		3.69	
	Median	10.00		11.00		6.00	
Bait	Mean	14.92	10.7	15.59	10.9	8.17	7.5
	Standard error	2.54		2.99		1.75	
	Median	4.00		0.00		0.00	
Food and Beverage	Mean	17.67	12.7	16.36	11.4	19.45	17.6
	Standard error	1.57		1.46		2.39	
	Median	15.00		15.00		18.00	
Daily Maintenance and Repair	Mean	3.75	2.7	4.50	3.1	1.09	0.9
	Standard error	1.77		2.11		0.50	
	Median	0.00		0.00		0.00	
Total Trip Cost	Mean	134.79	100	138.09	100	110.26	100
	Standard error	9.61		11.01		10.03	
	Median	105.00		105.00		90.00	

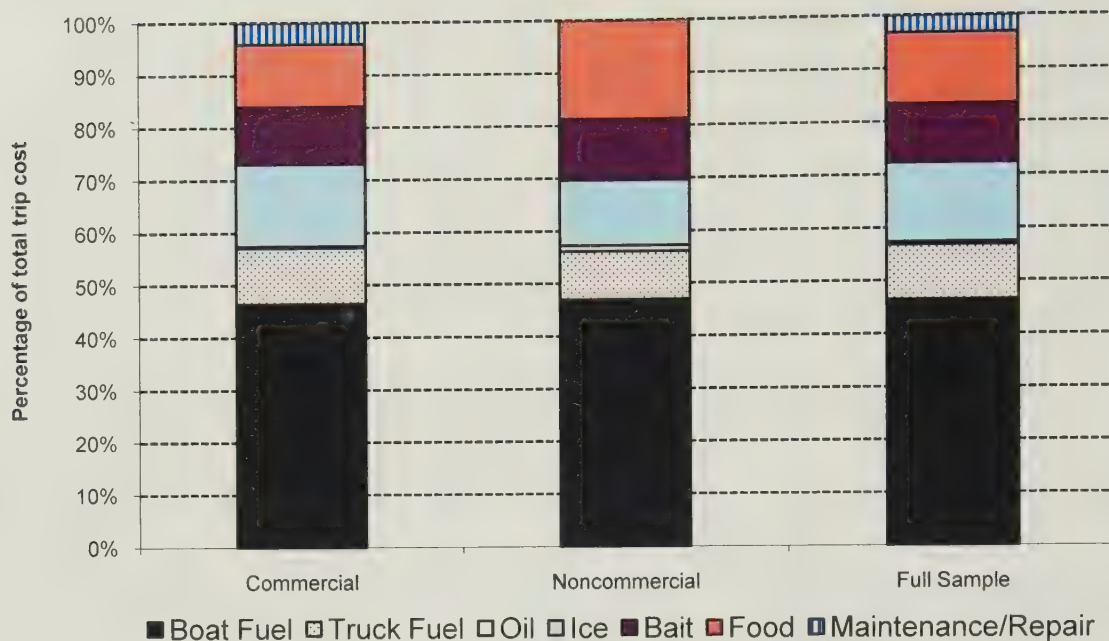


Figure 4. Cost structure for non-pelagic fishing trip

Investment and Annual Fixed Costs

In addition to variable trip costs, fishing in Hawai'i requires significant investment and annual fixed cost expenditures. The average boat purchase price adjusted for inflation and presented in 2007 dollars, equated to \$42,320 (Table 46). Approximately 87.4% of fishers we surveyed indicated that their boats were currently paid off. Nearly 36.8% of fishers took out a loan to pay for their boat with the average loan amount about 92.8% of the purchase price of their boat. We look at the relative loan amount to explore the degree of fisher investment, as a loan in excess of the vessel purchase may suggest equipment purchases or upgrades and repair to the boat. We see evidence of this tendency as the median loan amount to vessel purchase price ratio is 100%, suggesting that half of the fishers took out a loan in excess of the purchase price of the boat. As noted in Table 46, roughly 12.6% of them still carry debt on their fishing vessels.

Table 46. Initial vessel investment: means, standard errors, and medians

Variable		Full sample	Commercial	Noncommercial
Purchase price (in \$2007)	Mean	42,320	45,188	33,811
	Standard error	2,380	2,544	5,530
	Median	33,291	35,511	21,166
Is this boat completely paid off? (percentage)	Yes	87.4	85.3	93.5
	No	12.6	14.7	6.5
Did you take out a loan to pay for this boat? (percentage)	Yes	36.8	39.3	29.0
	No	63.2	60.7	71.0
Original loan amount relative to purchase price of boat? (percentage)	Mean	92.8	94.3	87.5
	Standard error	8.9	11.1	7.7
	Median	100.0	94.4	100.0

Clearly, purchase price is directly related to the size of boat. Boats in our sample were characterized by size categories and the distribution of boat size, as well as the average purchase price by boat size is presented in Table 21 and Table 47, respectively.

Table 47. Purchase price (in \$2007) by size of boat

Size	Mean	Standard error	Median
Average price, by category			
Less than 16 feet	9,492	3,827	5,765
16 feet – 24 feet	29,958	1,814	25,583
25 feet – 30 feet	63,521	4,812	57,945
Greater than 30 feet	94,770	12,923	84,826

Fixed Costs and Annual Investment

Loan payments, boat insurance, and fees associated with fishing are a few of the annual fixed cost expenditures fishers incur in the Hawaii small boat pelagic fishery. In addition, fishermen invest in gear, upgrades and improvements to their boat, etc. To investigate levels of annual investment, we asked fishers to estimate their expenditures on annual fixed costs and investment over the past 12 months. On average, fishermen estimated expending approximately \$11,102 in the past 12 months, of which 62% can be attributed to upgrades, improvements, maintenance, and repair to the fishing boat, and nearly a quarter (23%) is attributed to gear purchases. Fees include ramp fees, truck and trailer registration, and CML fees, where applicable. On average, fishermen face annual fees of approximately \$240. Commercial fishers indicated a larger level of investment over the past 12 months, including larger expenditures on maintenance/repair, major upgrades and improvements, and loan payments, on average.

Table 48. Annual fixed costs and investment in past 12 months:
means, standard errors, and medians, in dollars

Variable		Full sample	Commercial	Noncommercial
Boat insurance	Mean	401	442	281
	Standard error	71	94	53
	Median	0	0	0
Loan payments on the boat	Mean	878	1,062	341
	Standard error	178	233	164
	Median	0	0	0
Bookkeeping/accounting costs	Mean	60	81	0
	Standard error	24	32	0
	Median	0	0	0
Major upgrades and improvements to the boat	Mean	4,912	5,278	3,848
	Standard error	487	579	879
	Median	2,000	2,000	1,000
Maintenance/Repair of the boat and trailer	Mean	1,968	2,297	1,013
	Standard error	292	386	170
	Median	600	900	500
Gear	Mean	2,588	2,723	2,195
	Standard error	264	309	505
	Median	1,200	1,500	500
Fees	Mean	240	258	188
	Standard error	18	21	31
	Median	200	200	150
Other	Mean	55	66	22
	Standard error	22	29	19
	Median	0	0	0
Annual fixed costs and investment in past 12 months	Mean	11,102	12,207	7,888
	Standard error	704	867	1,044
	Median	6,675	7,500	4,700

We found full-time commercial fishermen's total fixed costs and investment in the past 12 months were significantly greater than part-time commercial fishermen. High variation in these data are found, likely because annual investment values can fluctuate substantially from year to year.

Table 49. Annual fixed costs and investment in past 12 months:
means, standard errors, and medians, in dollars (commercial)

Variable		Full commercial sample	Full-time commercial	Part-time commercial
Boat insurance	Mean	442	516	419
	Standard error	94	109	119
	Median	0	0	0
Loan payments on the boat	Mean	1,062	1,571	899
	Standard error	233	570	246
	Median	0	0	0
Bookkeeping/accounting costs	Mean	81	222	36
	Standard error	32	125	10
	Median	0	0	0
Major upgrades and improvements to the boat	Mean	5,278	7,738	4,487
	Standard error	579	1,314	628
	Median	2,000	4,025	2,000
Maintenance/Repair of the boat and trailer	Mean	2,297	3,930	1,771
	Standard error	386	1,066	370
	Median	900	1,350	600
Gear	Mean	2,723	3,998	2,314
	Standard error	309	960	261
	Median	1,500	2,000	1,200
Fees	Mean	258	310	242
	Standard error	21	61	19
	Median	200	200	200
Other	Mean	66	117	50
	Standard error	29	74	31
	Median	0	0	0
Annual fixed costs and investment in past 12 months	Mean	12,207	18,402	10,218
	Standard error	867	2,421	869
	Median	7,500	12,760	7,520

A mere 35.3% of fishers indicated that they have boat insurance, with many noting anecdotally that it was too expensive (Table 50). While fishermen spend an average of \$401 on boat insurance (Table 48), if we limit the analysis to just those fishers with insurance we find the average annual insurance cost is approximately \$1,144, with commercial fishermen incurring larger insurance costs (see Table 50).

Table 50. Insurance and loan payments in past 12 months:
means, standard errors, and medians

Variable		Full sample	Commercial	Noncommercial
Do you currently have boat insurance? (percentage)	Yes	35.3	33.7	40.0
	No	64.7	66.3	60.0
Boat Insurance (annual cost for those with boat insurance, in dollars)	Mean	1,144	1,327	702
	Standard error	178	246	79
	Median	800	900	685
Is your boat currently paid off? (percentage)	Yes	87.4	85.3	93.5
	No	12.6	14.7	6.5
Loan Payments on the Boat (annual cost for those with loan Payments, in dollars)	Mean	6,369	6,692	4,431
	Standard error	837	954	1,024
	Median	5,000	5,000	3,600

Table 51. Insurance and loan payments in past 12 months:
means, standard errors, and medians (commercial)

Variable		Full Commercial sample	Full-time commercial	Part-time commercial
Do you currently have boat insurance? (percentage)	Yes	33.7	41.3	30.8
	No	66.3	58.7	69.2
Boat Insurance (annual cost for those with boat insurance, in dollars)	Mean	1,327	1,248	1,360
	Standard error	246	148	348
	Median	900	1,200	875
Is your boat currently paid off? (percentage)	Yes	85.3	86.4	84.8
	No	14.7	13.6	15.2
Loan Payments on the Boat (annual cost for those with loan Payments, in dollars)	Mean	6,692	9,034	5,841
	Standard error	954	1,546	1,137
	Median	5,000	7,656	4,100

Total Investment in the Fishery

The purchase of a fishing vessel covers only a portion of the capital investment required to fish. Fishers need to purchase a trailer and have a truck capable of hauling their vessel. In addition to gear, electronics, and mandatory safety equipment, many also invest in ice makers or freezers. We asked fishermen to estimate their total investment in the fishery over the life of their current vessel. The largest percentage of total investment (over the life of the boat), aside from the actual boat purchase, is in major upgrades and improvements to the boat. On average, fishers reported spending \$13,651 to upgrade and make improvements to their vessel (not adjusted for inflation), ranging from engine replacement, mechanical work, damage repair to general aesthetic improvements. The next largest investment category expended is vehicle expenses.

Our results for vehicle investment are difficult to interpret as we do not have an accurate way to correct responses for inflation and additionally, fishers expressed mixed

perceptions on the role their truck has in their fishing operations. Many respondents gave a value of zero because they claimed that they did not specifically purchase their truck for fishing, and used it for work or general transportation. Fishermen estimated an average truck investment of \$9,043. Gear investment, the third largest component of total fisher investment costs fishers approximately \$8,215. In addition to gear, fishers have spent \$2,990 on electronics, and other investments (ice makers, freezers, and safety equipment) accounts for approximately \$1,820. In total, with vessel purchase price taken into consideration, the average fisherman in Hawai'i invested \$80,791 in their fishing operations. Commercial fishermen invested a significantly higher amount in their truck, trailer(s), and electronics compared to noncommercial fishermen. Additionally, we find that full-time commercial fishers have larger investment costs compared to part-time commercial fishers (see Table 53).

Table 52. Total investment in the fishery:
means, standard errors, and medians, in dollars

Variable		Full Sample	Commercial	Noncommercial
Major upgrades and improvements to boat	Mean	13,651	14,934	8,810
	Standard error	1,299	1,541	2,008
	Median	7,000	9,000	3,000
Trailer and hitch	Mean	2,842	3,146	1,693
	Standard error	330	405	331
	Median	1,000	1,000	450
Truck	Mean	9,043	10,450	3,729
	Standard error	1,016	1,191	1,579
	Median	0	1,000	0
Major gear currently used	Mean	8,215	8,776	6,069
	Standard error	902	1,109	946
	Median	6,000	6,000	5,000
Electronics currently used	Mean	2,990	3,331	1,702
	Standard error	219	261	271
	Median	2,250	3,000	1,100
Other investment (ice maker, freezers, safety equipment, etc.)	Mean	1,820	2,077	851
	Standard error	921	1,162	298
	Median	0	0	0
Total investment in the fishery	Mean	38,561	42,714	22,854
	Standard error	2,552	2,973	3,904
	Median	27,800	32,000	15,075

Table 53. Total investment in the fishery:
means, standard errors, and medians, in dollars (commercial)

Variable		Full commercial sample	Full-time commercial	Part-time commercial
Major upgrades and improvements to boat	Mean	14,934	23,049	12,300
	Standard error	1,541	4,806	2,176
	Median	9,000	15,000	7,750
Trailer and hitch*	Mean	3,146	4,774	2,618
	Standard error	405	969	747
	Median	1,000	3,500	550
Truck*	Mean	10,450	13,932	9,320
	Standard error	1,191	2,794	2,247
	Median	1,000	8,000	800
Major gear currently used	Mean	8,776	9,400	8,573
	Standard error	1,109	1,165	2,497
	Median	6,000	10,000	6,000
Electronics currently used*	Mean	3,331	4,122	3,075
	Standard error	261	613	492
	Median	3,000	3,000	2,500
Other investment (ice maker, freezers, safety equipment, etc.)	Mean	2,077	1,420	2,290
	Standard error	1,162	312	2,698
	Median	0	400	0
Total investment in the fishery*	Mean	42,714	56,697	38,176
	Standard error	2,973	6,918	5,508
	Median	32,000	44,300	28,770

* Significant difference at 5% level.

The majority of this investment can be directly linked to the State of Hawaii economy as 56.5% of fishers indicated that all their fishing investment has stayed in the State of Hawaii through purchases made solely from local retailers and vendors (see Table 54). However, the remainder of respondents had purchased fishing items out of state either online, through a catalog, or other outlets. The average percentage of investment from out of state, for our survey respondents, was approximately 14.8%. However, for respondents that indicated that they had, in fact, purchased items out of state, the average percentage was approximately 39%. A majority indicated that the bulk of their out-of-state purchases were electronics and fishing gear, although multiple fishermen had purchased trucks, trailers, and even boats on the mainland.

Table 54. Percentage of out-of-state purchases

		Full Sample	Commercial	Noncommercial
Did you purchase any of these items out-of-state, or buy them online or through a mail order catalog and have them shipped to Hawaii?	Yes	43.5	42.4	46.7
	No	56.5	57.6	53.3
Roughly what percentage of the above was purchased out-of-state and shipped to Hawaii?	Mean	14.8	13.1	20.9
	St. error	2.1	2.2	5.6
	Median	0.0	0.0	0.0
<i>For yes respondents:</i>				
Roughly what percentage of the above was purchased out-of-state and shipped to Hawaii?	Mean	38.6	35.9	46.7
	St. error	4.7	4.4	9.4
	Median	28.0	25.0	35.0

In an effort to explore the motivations of boat ownership, we asked respondents whether they would sell their boats if they were to stop fishing. This question elicited a diversity of responses in addition to the structured responses listed in Table 55. Approximately 56.5% of fishers indicated that they would sell their boats if they stopped fishing. The relatively large proportion of *no* and *don't know* responses (43.1%) indicates the great social and cultural values associated with fishing and importance of having a connection with the ocean in Hawaii. A number of respondents indicated that they intended to pass their boat on to other family members or relatives; however, some respondents indicated that they would never stop fishing. Noncommercial fishers indicated a higher willingness (64.4%) to part ways with their boats if they were to stop fishing compared to commercial fishers (50.3%).

Table 55. If you were to stop fishing would you sell your boat?

Response	Full Sample	Commercial	Noncommercial
Percentage of respondents, by category			
Yes	56.5	50.3	64.4
No	34.3	37.7	28.8
Don't Know	8.8	10.1	6.8
Other Answer	0.3	0.5	0.0

Social Aspects of Fishing

In addition to the market benefits detailed in prior sections (in terms of pounds of fish sold and investment expenditures contributing to the State of Hawai'i economy, amongst others), the Hawaii small boat pelagic fishery serves many vital nonmarket functions such as building social and community networks, perpetuating fishing traditions, and providing fish to local communities. This research makes a first attempt at quantifying the amount of unsold fish that filters to local families and communities, providing estimates of fish consumed by fisher families and the amount of fish that is shared with friends and relatives (not immediate family).

A primary motivation for fishing in Hawaii and the Pacific region is to fish for food. Our survey respondents indicated that they fished for food on approximately 73.8% of trips they had taken in the past 12 months. Commercial fishermen fished for food 71.4% of the time, which indicates the cultural importance of small boat fishing. By definition, noncommercial fishers sold no fish, but fished for food nearly 81% of the time and consumed, on average, 28.9% of the fish they caught over the past 12 months. The most common response (mode) was 10%. A mere 4% of fishers (6% of commercial fishers) indicated that they did not consume at home any of the fish they caught. It is a common understanding that noncommercial fishers consume a larger percentage of the fish they catch than commercial fishers. However, when the magnitude of the catch is taken into consideration, commercial fishers and their families likely consume significantly more. At the trip level, we found that commercial and noncommercial fishers kept nearly the same amount of fish for family consumption. Most fishers (62.5%) considered the fish they caught to be an important source of food for their family, with commercial fishers indicating a slightly greater reliance on their fish as a source of food security (see Table 56).

Table 56. Disposition of unsold fish, fish consumed

		Full Sample	Commercial	Noncommercial
Percentage of trips – fishing for food	Mean	73.8	71.4	80.6
	Standard error	2.6	3.1	4.7
	Median	100.0	100.0	100.0
What percentage of the fish you catch do you and your family consume?	Mean	28.9	16.6	49.4
	St. Error	1.6	1.3	2.5
	Median	20.0	10.0	50.0
Are the fish you catch an important source of food for you and your family?	Yes	62.5	65.4	57.7
	No	37.5	34.6	43.3

Commercial fishermen provide large amounts of fish for local communities and fishermen rely on their catch as a source of food. We found that the extent of this behavior increases as one becomes more reliant on fishing. While we found that part-time commercial fishermen reported consuming a higher percentage of their catch than full-time commercial fishermen, when considering the scale of full-time commercial effort this is a significant amount of fish. However, the percentage of fishers that indicated that the fish they catch are an important source of food for their family was greater for full-time commercial fishers compared to part-time commercial fishers.

Table 57. Disposition of unsold fish, fish consumed (commercial)

		Full commercial sample	Full-time commercial	Part-time commercial
Percentage of trips – fishing for food	Mean	71.4	49.7	77.3
	Standard error	3.1	7.4	3.3
	Median	100.0	32.0	100.0
What percentage of the fish you catch do you and your family consume?	Mean	16.6	8.3	18.9
	St. Error	1.3	2.1	1.5
	Median	10.0	5.0	10.0
Are the fish you catch an important source of food for you and your family?	Yes	66.3	67.4	66.0
	No	33.7	32.6	34.0

Most fishermen participate in fish sharing networks, as 97% of fishers reported that they give away a portion of the fish they catch to friends or relatives (not immediate family). Likewise, the average fisher shared approximately 32% of the fish they caught in the past 12 months. Again, while commercial fishers share a smaller percentage of the fish they catch, the magnitude of their catch would suggest that they may be more actively involved in fish sharing networks relative to noncommercial fishers.

Table 58. Disposition of unsold fish, fish shared

		Full Sample	Commercial	Noncommercial
Do you ever give away any of the fish you catch?	Yes	97.0	97.6	95.9
	No	3.0	2.4	4.1
What percentage of the fish you catch did you give away to friends or relatives (not immediate family)?	Mean	32.3	21.8	50.3
	St. Error	1.6	1.9	2.5
	Median	50.0	10.0	50.0

Fish sharing networks are culturally important for building social networks and can serve as a buffer against food insecurity in times of poor fishing or difficult macroeconomic conditions. As shown in Table 58 and Table 59, commercial fishers participate extensively in fish sharing channels. Part-time commercial fishers reported sharing 24.8% of the fish they caught, and even full-time commercial fishers indicated that approximately 10.6% of the fish they caught are shared with friends, relatives, or others not a part of their immediate family.

Table 59. Disposition of unsold fish, fish shared (commercial)

		Full commercial sample	Full time commercial	Part time commercial
Do you ever give away any of the fish you catch?	Yes	97.6	98.0	98.0
	No	2.4	2.0	2.0
What percentage of the fish you catch did you give away to friends or relatives (not immediate family)?	Mean	21.8	10.6	24.8
	St. Error	1.9	2.2	1.8
	Median	10.0	5.0	20.0

There appears to be little difference in the percentage of fish consumed or percentage of fish shared at the county level (see Table 60). These findings also hold when one considers strictly the commercial sector by county, as shown in Table 61. However, we do find a notable difference in the perception of fish as a source of food security for fishermen and families. A large majority of fishermen on Hawai'i (73.7%) and Maui (78.6%), and to a lesser extent Kaua'i (64.3%), feel that the fish they catch are an important source of food for their family. On the other hand, a slim majority of fishers on O'ahu (52.5%) noted that the fish they caught were an important source of food for their family. Reasons for this could range from differing interpretations of the wording in the question to the scale of development on O'ahu compared to the other counties in the State of Hawaii.

Table 60. Disposition of unsold fish, by county

		Full sample	Hawai'i	Maui	O'ahu	Kaua'i
What percentage of the fish you catch do you and your family consume?	Mean	28.9	27.9	34.1	29.1	25.4
	St. Error	1.6	3.4	4.7	2.2	3.0
	Median	20.0	15.0	25.0	29.0	15.0
Are the fish you catch an important source of food for you and your family? (percentage)	Yes	62.5	73.7	78.6	52.5	64.3
	No	37.5	26.3	21.4	47.8	35.7
Do you ever give away any of the fish you catch? (percentage)	Yes	97.0	98.7	100.0	94.9	98.3
	No	3.0	1.3	0.0	5.1	1.7
What percentage of the fish you catch did you give away to friends or relatives (not immediate family)?	Mean	32.3	25.6	36.2	34.5	32.3
	St. Error	1.6	2.9	4.4	2.3	3.7
	Median	25.0	17.0	25.0	25.0	25.0

In looking at spatial differences of unsold fish disposition for commercial fishermen across the islands of the State of Hawaii, we find little differences in participation rates. As in the full sample, commercial fishers from the island of O'ahu reported the lowest perception of fishing as an important source of food with only 55.1% indicating as such.

Table 61. Disposition of unsold fish, by county (commercial)

		Full commercial sample	Hawai'i	Maui	O'ahu	Kaua'i
What percentage of the fish you catch do you and your family consume?	Mean	16.6	16.8	13.2	17.0	16.8
	St. Error	1.3	3.0	2.9	1.7	2.5
	Median	10.0	5.0	10.0	10.0	10.0
Are the fish you catch an important source of food for you and your family? (percentage)	Yes	65.4	79.6	77.8	55.1	65.8
	No	34.6	20.4	22.2	44.9	34.2
Do you ever give away any of the fish you catch? (percentage)	Yes	97.6	98.1	100.0	97.0	97.5
	No	2.4	1.9	0.0	3.0	2.5

What percentage of the fish you	Mean	21.8	17.7	19.4	25.3	19.7
catch did you give away to	St. Error	1.5	2.7	3.3	2.6	3.0
friends or relatives (not	Median	10.0	10.0	17.0	20.0	12.5
immediate family)?						

IV. COMMENTS FROM FISHERMEN

In this section, we present a summary of comments received from fishermen when asked if they had *suggestions for how Hawaii's fisheries should be managed or topics they felt needed further study*. A raw compilation of comments we received is presented in Appendix B, and the comments are sorted by commercial and noncommercial fishers so that one can identify differences in the types of issues fishermen are concerned about. In general, concerns and comments addressed the longline industry, fishing regulations, the Hawaii bottomfish fishery, regulatory enforcement, boating facilities, rising fuel costs, and scientific research, amongst others. In addition to these topics, noncommercial fishermen expressed concerns about various aspects of commercial fishing. A short summary of some of these topics follows.

Commercial Fishermen

Across the State of Hawaii, the most consistently negative comments received from commercial fishermen were with respect to the Hawaii longline fleet. The general consensus among small boat fishers is that longline boats are seen as competition, in terms of catch and marketing, and many feel that they are extracting a disproportionate amount of fishery resources. Longliners are generally seen as the “bad guys”, under-regulated, and favored over the small boat fishermen by regulatory agencies and the auction. Many comments were made with regards to fish marketing and their relationship with the auction in Honolulu. There are numerous comments suggesting that the longline fishery should be shut down completely. Additionally, fishers suggested increased regulation of the longline industry to improve the ability of small boat fishers’ to catch larger ahi and other pelagic species.

Fishing regulations were a major topic of concern for commercial fishermen. A few commercial fishers have concerns about the redundancy and hassle of filing monthly catch reports, and they also complain of harassments for not filing catch reports on time. Additionally, there was a rather strong sentiment that the size limits on ahi should be increased to allow juvenile fish to reach maturity. However, with that said, the overwhelming majority of regulatory comments focused on the hot topic of the time, the emergency seasonal closure of the main Hawaiian Islands bottomfish fishery during the summer of 2007.

The commercial fishers in favor of the closure were far outnumbered by those opposed to the closure. The fishermen who were against the closure generally had much more to say regarding what should be done differently or why they disagree with the regulation. A comment frequently made is that the closure is occurring during the wrong season. The understanding is that fishers do not bottomfish during the summer months, and fishers noted that the majority of bottomfishing occurs in the winter months and around the holidays, which they indicate is also during the spawning season. Numerous fishers have said that the closure needs to take place over an extended period of time such as 1 to 2 years, rather than only 5 months. Also, it is general knowledge among the fishing community that ta'ape eat a large number of juvenile bottomfish having a negative effect on populations. This is a common complaint as well. On both sides of the issue is a call for enforcement of the new regulations. Some people say closures such as this only hurt the honest people, and fishers continue to break the rules and bottomfish during the closure because there is no enforcement.

Many fishers insisted on increased enforcement of existing regulations, rather than a focus on imposing additional regulations. This sentiment was most strongly echoed in the case of Hawaii bottomfish, both with the spatial closures across the state and the seasonal closure. Numerous enforcement comments – of varying degrees – were made about fish aggregating devices (FADs) in local waters. Many were concerned of reports of illegal activity at FADs, fishermen catching juveniles, and the use of illegal personal FADs. The list of comments with respect to FADs ranges from FAD productivity and placement to suggestions for increased regulations on FAD usage.

Many fishermen expressed a deep-seeded sense of disenfranchisement with fishery management agencies in response to lack of enforcement and the poor conditions that exist at many of the state boating facilities. In the face of record high fuel prices during our fieldwork, many fishers felt that management agencies should be doing more to help fishers out. Suggestions for this included subsidizing fuel purchases, providing more outlets for ethanol-free fuel, and waiving general excise taxes for fishing fuel.

Lastly, in regards to research, a handful of fishers claimed that people do not tell the truth and, therefore, the catch reports provide inaccurate guidelines for regulations. However, fishers insist that more data are needed to ensure that inaccurate or inadequate data are not used in policies, as many feel was the case for the seasonal bottomfish closure.

Noncommercial Fishermen

In many respects, noncommercial fishermen's comments closely mirrored the comments made by commercial fishermen, yet they were not as extensive or lengthy and did not focus extensively on the longline industry. We heard limited comments on catch reports and size limits, but instead heard general complaints about "commercial" fishermen. Noncommercial fishermen are still concerned with, and hold opposing views, regarding the various bottomfish closures (spatial and seasonal).

Comments about fishermen's input in the management process (or lack thereof) are uncommon in the noncommercial sector. General concerns affecting people's ability to fish in Hawai'i are found throughout the noncommercial fishermen's comments in Appendix B. The overarching themes are reflected in the comments regarding harbor repair and maintenance, fuel prices and ethanol, enforcement, regulations, FADs, community, and disenfranchisement. Furthermore, noncommercial fishermen identified numerous environmental concerns that were not found in the commercial comments.

V. DISCUSSION: FUTURE MANAGEMENT CONSIDERATIONS

The comments described above and compiled in raw form in Appendix B provide a valuable resource for fishery managers and should be incorporated into considerations for future management of the Hawai'i small boat pelagic fishery. Numerous management changes are on the horizon, both in terms of changes to existing management regimes within the fishery as well as new institutional requirements, and this research can inform policymakers and promote successful management practices in the future. The most pressing issue facing the Hawai'i small boat pelagic fishery in the near future is a mandate of annual catch limits (ACLs) and the allocation decisions that may ultimately be made in the context of 'catch share' management.

The reauthorized Magnuson-Stevens Act of 2007 declares that ACLs must be put in place by 2011 for all federally-managed fisheries. Regulators may also choose to allocate the allowable catch among fishery sectors. However, legal definitions of commercial and recreational fishing are problematic in Hawai'i as they do not accurately consider the cultural motivations towards fishing and may not be adequate in properly describing fishing activity, motivations, and attitudes from the small boat sector. We have shown that many fishermen self-classify themselves counter to existing regulatory frameworks. Additionally, as 84% of our noncommercial survey respondents do not currently own a commercial marine license, and 81% do not keep logs of fishing activity, we have a large segment of the fishery with no catch history. If allocated quotas or a catch share system is adopted, it will be inequitable at best to base these allocations based on historical records as a large population has none – and were under no legal obligation to do so. Secondly, any attempts to allocate quota and/or catch shares within this fishery will be wrought with difficulties. As shown in this report, when taken in aggregate, there are very few differences across fishermen in terms of fishing activity, investment levels, and trip expenses. However, the scale and magnitude of fishing effort varies greatly within the commercial side of the fishery. Therefore, it is of great importance to ensure that fishermen are not marginalized under any forthcoming management regimes that establish and allocate quotas. Nearly 74% of fishermen in our sample indicate that a primary motivation of their fishing trips is to fish for food (Table 56). Therefore, any reductions or reallocation of effort in this fishery may be eliminating an important source of food for local families and communities.

VI. CONCLUSION

This report has detailed classification issues within the small boat fishery, characterized operational conditions of the fishery and provided managers with a new look into the social importance of small boat pelagic fishing. Classification is an inherent complication for this fishery. Our findings indicate that just over 30% of fishers that self-classified themselves as *recreational* fishermen indicated that they had sold fish in the past year. This provides evidence of a disconnection between fishermen's perceptions and existing regulatory frameworks which will complicate any future efforts to allocate annual catch limits, especially if allocation decisions are to be made in some form of 'catch share' program. While the scale of fishing activity is closely related to fisher classification, we find few differences in trip-level expenditures across classification.

Fishermen in Hawaii have varying degrees of market participation and access based on their motivation for selling fish and geographic constraints. The majority of fishers in our sample reported selling fish to simply cover trip expenses confirming strong recreational aspects of fishing associated with legally-defined commercial trips. Commercial fishers reported average gross revenues that covered variable trip expenses for the year, which justifies this motivation, and few fishermen reported substantial profits associated with their fishing efforts. In light of this finding, fishermen are heavily invested in the fishery suggesting that the ability to cover trip costs may be the driver of fishing effort. Additionally, there are clearly nonmarket values present in the fishery that should be taken into consideration in understanding fisher behavior. Fishers heavily reliant on fishing are finding it increasingly difficult to maintain a fishing livelihood. Many lament that while trip costs continue to climb from year to year, prices for the fish they sell remain relatively flat.

Based on the heterogeneous scale of fishery revenues in our sample and rising costs of fishing, it is likely that fishermen may have alternative responses to fluctuating macroeconomic conditions. It is likely, in the face of increasing fuel costs, that fishers may take fewer trips or may simply switch target species and focus on less fuel-intensive gear types. This gear flexibility within the fishery, as 47% of our survey respondents utilizes more than one gear type, has important management implications. Additionally, due to relative ease of market access, some fishers may increase the percentage of fish they sell, removing a potentially valuable food source for their families. While regulations are typically designed to address biological conditions within a fishery, it may become increasingly important to consider macroeconomic conditions and the role it plays on fisher behavior. Increasing fuel costs may put additional pressure on nearshore resources as fishers seek to reduce trip-level expenditures.

The overwhelming majority of the fish caught by the Hawaii small boat fleet remains in Hawaii to feed local families, communities, and tourists through market channels such as retail outlets and restaurants. However, large amounts of fish are not sold directly benefitting local families and communities. This research makes a first attempt at quantifying the scale of unsold fish entering communities. On average, our sample

indicates that approximately 38% of fish caught by commercial fishers is not sold (and by definition 100% of noncommercial catch). While the magnitude varies by fisher classification, 97% of our sample indicated that they participate in fish sharing networks with friends and relatives and 62% consider the fish they catch to be an important source of food for their family.

The results detailed in this report provides an important baseline that will allow fishery managers to better understand how new fishery regulations and changing macroeconomic conditions will affect the financial performance of fishers and behavioral aspects of the fishery. Based on evidence of high levels of heterogeneity within the Hawaii small boat pelagic fishery, it is clear that participants will respond in different ways to regulatory proposals, and failure to account for this may result in unintended consequences to management actions. This recent snapshot of the economic and social characteristics of the Hawaii small boat fishery will provide managers the information necessary to make informed and sound policy decisions on future regulatory alternatives for this fishery.

VII. ACKNOWLEDGMENTS

Numerous people were vital to the successful implementation of this research, and while we cannot list everyone that contributed here, I would like to acknowledge a handful of individuals. For one, this work could not be accomplished without the willing participation of small boat fishermen across the State of Hawai'i, and so we would like to express our appreciation for their wisdom and cooperation. Additionally, we wish to thank William Aila for his invaluable insights into the fishery and help in reviewing the survey instrument. State of Hawai'i Marine Recreational Fishing Statistical Survey field staff assisted in helping to get us acquainted with local conditions at various boat ramps across the State. Kristy SeBlonka worked with us in the field as a survey assistant, conducting many of the interviews. Thanks are in order for Chuck Johnston of Hawai'i Fishing News who accepted and published a letter on our behalf allowing us to inform fishers of our study, and as many fishers mentioned the article, it undoubtedly helped our cause. Lastly, but not least, I wish to thank Kurt Kawamoto, Dennis Kamikawa, Roy Morioka, Frank Farm, and Stewart Allen who provided valuable comments on early drafts of the survey questions which allowed us to field a robust survey instrument.

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Appendix A

Survey Questionnaire

1. About what time did you get your boat in the water today?

2. How many years have you fished in Hawaii? _____ yrs

3. We would like to know how you would define yourself as a fisherman. I will read off a list. You may give multiple responses if you like. Would you say that you are *(Check all that apply)*

- ☐ Full-time commercial ->Q3a
☐ Part-time commercial ->Q4
☐ Weekend Warrior ->Q4
☐ Recreational ->Q22a
☐ I fish primarily for food ->Q4
☐ Other (specify) _____ ->Q4

If full-time commercial:

3a. How many years have you fished commercially in Hawaii?
_____ yrs

If full-time commercial:

3b. Did you previously fish commercially in another state?
☐ yes ☐ no

Otherwise, (most all will be trailered)

4. Is your boat? ☐ trailered ☐ moored

5. What is the length of this boat *(in feet)*? _____

6. Do you own this boat? ☐ yes ->Q7 ☐ no ->Q13

If own:

7. Do other people use this boat without you? *Read list*
☐ often ☐ sometimes ☐ rarely ☐ never

If own: (may get response that they built boat)

8. In what year did you purchase this boat? _____

If own: (if homebuilt – how much did it cost to build it)

9. How much did you pay to purchase this boat? \$ _____

If own:

10. In what year was this boat built? _____

If own:

11. Is the boat completely paid off? ☐ yes ☐ no

If own:

12. Did you take out a loan to pay for the boat?
☐ yes ->Q12a ☐ no ->Q13

If yes (if own):

12a. What was the original loan amount? _____

If yes to Q12: (If own)

12b. Have you taken out a second loan? ☐ yes ☐ no

In an effort to better understand your economic contribution to the state of Hawai'i we would like to ask about the annual costs you must incur to fish. Please remember that all your answers are strictly confidential

If don't own(Q6=NO) you won't get answers for all of these

13. In the past 12 months how much money did you spend on:

Boat insurance \$ _____
 Loan payments on the boat *(if Q11 is no)* \$ _____
 Bookkeeping/accounting costs \$ _____
 Major upgrades and improvements to the boat *(engine, hull, safety equipment)* \$ _____
 Maintenance/repair of the boat and trailer *(fuel tank replacement, engine repair, hull repair)* \$ _____
 Gear *(rods, reels, gaffs, line, lures, coolers)* \$ _____
 Fees *(license fees, ramp fees, registration, truck/trailer registration, etc.)* \$ _____
 Other \$ _____
☐ *← mark if they provided a purchase that should be paid for*

If own:

14. Over the life of the boat, not including last year, roughly how much has been spent for

Major upgrades and improvements to the boat \$ _____
 Trailer and hitch \$ _____ *(tires, bearings)*
 Truck \$ _____
 Major gear currently used \$ _____
 Electronics currently used \$ _____
 Other *(ice maker, freezer, etc.)* \$ _____

If own:

15. Did you purchase any of these items out-of-state, or buy them online or through a mail order catalog and have them shipped to Hawaii?

☐ yes ->Q15a ☐ no ->Q16

If yes (If own)

15a. Roughly, what percentage of the above was purchased out-of-state either online, a mail order catalog, or shipped to Hawaii? _____%

16. Approximately how many trips did you take in this boat over the past 12 months, including nonfishing trips? _____

17. In the past 12 months, what percent of your trips were:

Nonfishing trips *(waterskiing, taking boat ride with family/friends, funeral)* _____%
 Holoholo fishing for fun, but not selling fish _____%
 Expense fishing trips where enough was sold to just cover your costs associated with fishing: _____%
 Profit fishing trips where you sold fish to make money above and beyond your trips costs: _____%
 Fishing for food: _____%

18. Fishermen in Hawaii use many gear types, we would like to know your most common gear usage. In the past 12 months, what percent of your fishing trips were:

Trolling _____%
 Handline for bottomfish _____%
 Reef fishing *(diving/spearfishing)* _____%
 Akule/Opelu _____%
 Palu ahi _____%
 Ika shibi *(primarily big island)* _____%
 Mixed gear *(specify)* _____%
 Other gear *(aquarium fish collection, crabbing)* _____%

19. What was the primary gear type used today?

We now want to understand your per trip costs for fishing.
Please remember that all your answers are strictly confidential

20a. How much money was spent on your trip today for:

Boat fuel \$ _____ / trip ☐ gas ☐ diesel

Truck fuel (round trip) \$ _____ / trip

Oil \$ _____ / trip

Ice \$ _____ / trip

Bait \$ _____ / trip

Food and beverage \$ _____ / trip

Daily maintenance and repair \$ _____ / trip

Any other costs (specify) _____

20b. What about for your last

trip

Boat fuel \$ _____ / trip ☐ gas ☐ diesel

Truck fuel \$ _____ / trip

Oil \$ _____ / trip

Ice \$ _____ / trip

Bait \$ _____ / trip

Food and beverage \$ _____ / trip

Daily maintenance and repair \$ _____ / trip

Any other costs (specify) _____

21. Do you normally share these costs with anyone?

☐ yes -> Q21a ☐ no -> Q22a

if yes:

21a. Roughly, what percentage of these costs do you pay per trip? _____ %

22a. What was the maximum distance from shore that you fished today? _____ miles

22b. On average how many miles away from shore did your boat fish today _____ miles

22c. What about for your last <Second most common trip type> trip. What was the maximum distance from shore? _____ miles

22d. And the average distance from shore? _____ miles

23a. How many people in total, including yourself, were on board today? _____

23b. What about your last <Second most common trip type> trip, how many people were on board? _____

24. Do you always fish out of the same boat ramp?

☐ yes -> Q25 ☐ no -> Q24a

If no:

24a. On average, how many different boat ramps do you use in a year? _____ ramps

If trailered: (motor, trim, outboard)

25. On average, how far do you travel to launch your boat? _____ miles or _____ minutes

26. Roughly, how many total pounds of pelagic fish (ahi, aku, ono) were caught on all your boat's trips in the past 12 months? _____ lbs or _____ lbs/trip

27. Roughly, how many total pounds of non-pelagic fish (bottomfish, akule/opelu, reef fish) were caught on all your boat's trips in the past 12 months? _____ lbs or _____ lbs/trip

28. In the past 12 months, did you ever sell any of the fish you caught?

☐ yes -> Q29 ☐ no -> Q37

If yes:

29. When you sold your fish, did you consider yourself a commercial fisherman trying to make some income or were you just trying to cover trip costs? ☐ commercial ☐ covering costs ☐ both/depends ☐ get rid of it

If any catch is sold:

30. In the past 12 months roughly what % of the pelagic fish (ahi, aku, ono) you caught did you sell? _____ %

If any catch is sold:

31. In the past 12 months roughly what percentage of the non-pelagic fish (bottomfish, akule/opelu, reef fish) you caught did you sell? _____ %

32. Do you feel that you receive a fair price for the fish you sell?

☐ yes ☐ no ☐ sometimes ☐ don't know/other answer

If any of the catch was sold:

33a. Where did you sell your fish on your last <Most common trip type> trip (read list than get rough %)

- ☐ Auction (O'ahu) _____ %
☐ Markets/stores _____ %
☐ Restaurants/bars _____ %
☐ Roadside sales _____ %
☐ Friends/neighbors/coworkers _____ %
☐ Other (specify) _____ %

33b. What about your last <Second most common trip type> trip

- ☐ Auction (O'ahu) _____ %
☐ Markets/stores _____ %
☐ Restaurants/bars _____ %
☐ Roadside sales _____ %
☐ Friends/neighbors/coworkers _____ %
☐ Other (specify) _____ %

If any of the catch was sold:

34. Do you always sell your fish to the same place? ☐ yes ☐ no

If any of the catch was sold:

35. In the past 12 months, how much did your boat gross, before expenses, from selling fish? \$ _____

If any of the catch was sold:

36. In the past 12 months, after expenses, what percent of your personal income, before taxes, came from fishing? _____ %

37. On average, what percentage of the fish you catch do you and your family consume? _____ %

38. Are the fish you catch an important source of food for your immediate family? ☐ yes ☐ no

39. Do you ever give away any of the fish you catch?

☐ yes -> Q39a ☐ no -> Q40

If any of the catch was given away:

39a. What percentage of the fish you catch do you give away to friends or relatives (not immediate family)? _____ %

40. Do you keep a daily log of catch, expenses, and/or fishing activity?

☐ yes ☐ no

If own:

41. If you were to stop fishing, would you sell your boat?

☐ yes ☐ no ☐ don't know ☐ refused
to answer

Lastly we would like to get some demographic information from you

42. What is the zip code where you live? _____

43. (Observe) gender M F

44. How would you describe your race (select one or more)? _____

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Native Hawaiian or Other Pacific Islander
5. White

45. How would you describe your ethnicity? _____

1. Hispanic or Latino
2. Not Hispanic or Latino

46. What is your age? _____

1. Less than 25 years
2. 25 to 34 years
3. 35 to 44 years
4. 45 to 54 years
5. 55 to 64 years
6. more than 64 years

47. What is the highest level of education you have completed? _____

1. Less than high school
2. Some High school
3. GED
4. High school graduate
5. Some college
6. Apprentice School
7. Associates Degree
8. Bachelors Degree
9. Some graduate education
10. Masters or PhD
11. Professional Degree

If not fulltime commercial fisherman (Q3):

48. Are you currently employed? *Read list*

1. Full-time ->Q48a
2. Part-time ->Q48a
3. Retired ->Q49
4. Unemployed ->Q49
5. Other (specify) _____ ->Q48a

If employed fulltime/partime (not fulltime commercial fisherman):

48a. In the past 12 months, did you ever take time off without pay to fish? ☐ yes ☐ no

49. Do you currently have a commercial marine license?

☐ yes ☐ no ☐ used to, but not now

50. What was your total household income, before taxes, in 2006, including fishing income? **[show card B]** *HOUSEHOLD not personal (unless single). Try to get a figure. But if hesitating or reluctant offer categories show card*

\$ _____

1. Less than \$10,000
2. \$10,000 to \$14,999
3. \$15,000 to \$24,999
4. \$25,000 to \$34,999
5. \$35,000 to \$49,999
6. \$50,000 to \$74,999
7. \$75,000 to \$99,999
8. \$100,000 to \$149,999
9. \$150,000 to \$199,999

10. more than \$200,000

If any of catch was sold:

51. What percentage of your total household's income, before taxes, in 2006 was from fishing? _____ %

HOUSEHOLD not personal

52. What's the best way to get the results of this study back to you?

TIME COMPLETED:

53. Do you have any suggestions concerning how Hawaii's fisheries should be managed or topics which need further study? ☐ yes ☐ no

Comments

Paperwork Reduction Act Statement. The information you provide will remain strictly confidential as required by section 402(b) of the Magnuson-Stevens and NOAA Administrative Order 216-100, Confidentiality of Fisheries Statistics, and will not be released for public use except in aggregate statistical form without identification as to its source. We will combine your responses with information provided by other participants, and report it in summary form so that responses for any individual vessel can not be identified. Public reporting burden for this information collection, including time for gathering data needed and completing the survey, is estimated to average 30 minutes per respondent. Please provide comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Justin Hospital, NOAA Fisheries, 2570 Dole St., Honolulu, HI 96822, 808-983-5742, Justin.Hospital@noaa.gov. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number

Appendix B

Fisher Comments and Suggestions

The final item of our survey instrument was an open-ended question asking fishers for suggestions on how Hawaii's fisheries should be managed and/or topics that need further study. We also solicited comments and concerns that they wished to express. This Appendix presents a relatively raw account of the numerous comments and suggestions received from fishers in the field. The comments have not been edited and are presented as transcribed by the interviewer. For organizational purposes, we present the comments by general themes. The themes are not in any particular order. If a comment has a (#) after it, that corresponds to the number of fishers that gave virtually the same wording for their comment. Additionally, we divide the comments by mode of fisher (commercial and noncommercial), for the reader to see the relative importance of certain issues to different groups of fishers.

The basic themes are: Longline Concerns and Regulations, Fish Marketing, Gas and Ethanol Concerns, Harbor Maintenance, Research, Enforcement, Regulations, Fish aggregating devices (FADs), Management, Fishermen's Input, Community, Disenfranchisement, and Miscellaneous.

Fishermen's Comments and Suggestions by Motivation: Commercial

Longline Concerns and Regulations

Shut down longlining completely

- Get longliners out. (4)
- Keep long liners out. (4)
- Shut down longliners (2) - don't target North Hawaiian Islands.
- Get rid of big commercial longliners. The fish the longliners said is old. (2)
- I just hope that they stop this longline fishing; it is doing away with all the fish. (2)
- Ban the longliners.(2) One trip they make, we would not catch that much in our lifetime. He said he has "been in the red for 4 years" and has not made a profit in the last four years.
- Get rid of the long liners. Stop importing fish. Longliners and guys with FADs are pounding fish and dumping fish on markets, ruins prices for small boat guys who are all local and feeding their families.
- Should get rid of longliners and leave to small boats. Longliners do more damage.
- Get rid of longliners, gucked up fishery here and everywhere. Never used to have to go 30 miles out, just killing fishery, fencing off island. Indiscriminate killing, not really targeting anything, targeting and killing all.

Regulate longline industry

- Regulate longliners
- More regulations on longliners
- More pressure on longliners and others who rape the ocean.
- Longliners, raise legal catch limits on the size of ahi.

- Limit longline fishing from 10-2, 130 + boats and they are not even from Hawai'i. Do more for restocking and hatcheries like in Alaska. There are more fish now that longliners have monitors. They come too close to shore. The sportfishing industry is worth more than longlining.
- Let longline boats go only one time. Let small guys catch fish. Trolling, everyone catches fish. Akule/opelu guys have no chance.

Effects on the Small Boat Fishing Industry

- Need restrictions on long liners because they catch tuna too small (stores shouldn't buy). They also mess up the migration patterns of tuna. The small boat fishermen know their migration.
- Control the longliners and big tuna boats. Long liners should have a different price of fish than ours because the quality of their fish isn't as good; sits all week while out, we take fish straight to the block but still get same price. We struggle because of those guys; the longliners hurt us a lot. When they stopped fishing 4-5 years ago, fishing was good.
- Long liners change prices for everyone. Get rid of at least half of the long liners, if there were none, he'd make lots of money.
- Need to look at longline industry, local fishermen don't put dent in anything. Need to regulate what's brought in, have an allowable catch on a grand scale, especially for long line boats because they are annihilating things. They come regulate the little guys and the big guys get off the hook.
- When longlining was closed, we saw ahi increase a lot. Longliners impact the fishery more. Need to ban the size of small tuna for sale.
- Minimize catching (TAC) of longliners, affects us and others trying to make a living as small boat fishermen
- Limit on where the longliners can catch the fish.
- Shouldn't invite people from the gulf coast to fish here. State of Hawai'i invited longline boats. Screwing small boat guys.

Concerns of Foreign Influence in the Longline Industry

- Ownership of longline vessels should be local. Longliners are depleting resources.
- Every small boat owner would like to see a lot less long liners. 30-40% of fish from long liners is barely suitable as cat food. It's a waste of marine resources. Ownership of longline fleet should be local. Longliners are depleting resources.
- Stop the commercial longlining from other countries. They catch the fish before they even reach the U.S. waters.
- Don't let foreigners come fish. Kick out long liners, only locals, no more immigrants so locals can buy houses. Prices drop from long liners.

Distance of Longline boats should be regulated

- Long liners shouldn't come close to shore, 25 miles is too short and they come in even closer.
- Longliners should stay more than 100 miles from shore.
- One time, NOAA stopped longliners from coming within 200 miles of shore, and when they did, we got 200lb. ahis. Now, it's rare. Way back, 25 years ago, there were 300lb ahis and lots of 170 pounders.

Concerns about the longline industry

- Longliners taking all the fish (2)
- Concerned about the longliners.
- BF permitted guys can fish; purse seiners doing all the damage and need to be regulated, not us. Longliners and small boat fishermen are not catching the same fish; not competing with each other (yellow fin tuna and big eye).
- Commercial local guys are not a huge impact, big commercial boats are. I don't think we are capable of overfishing on a greater scale.
- Study long ling fishing more.
- Even longliners are better than purse seiners
- Longliners take all the fish.

Fish Marketing

Price of fish, auction, selling fish, longliners

- Better fish prices.
- Better price for fish, the gas prices are killing us.
- Ban the sale of spearfished fish.
- The fish the longliners sell is old.
- Limit the sale of ahi to fish over 10-15lbs.
- The fishermen said he gets a fair price every once in a while.
- 30-40% of fish from longliners is barely suitable as cat food. It's a waste of marine resources.
- There are so many more controls on outside fishing. A lot of fish from Hawai'i waters is sent to Japan and we import frozen fish from the Philippines. The public doesn't know where the fish is from. Need to make a law to label fish. People are paying the price of local fish but it's been previously frozen. This would give our fish a better chance.

Auction

- Open up a second auction.
- Size and weight limits on pelagics and open up a second auction. He sold a big eye sashimi for \$0.20 a lb. for a prime tuna, [which was then] sold in the store for \$9 a lb.
- The auction is corrupt; people who want to start a new auction are black balled at the auction because the auction boat comes to the buoys to intimidate fishermen.
- We need a second auction in order to not drive down prices.
- Take care of local fish when it comes in [to the auction]. The small boat fish is fresher than longliner's. Auction says fish doesn't have temperature but it's fresh and red when we cut it.
- At the auction, sometimes prices are lower because supply is not enough.
- Does not feel that he gets a fair price or a fair shake at the auction – the auction controls the price of fish (and shouldn't).
- Fish should be sold on quality of fish, not by the methods used to catch – longline boats get their fish put out first. One time they told him that his fish was not sold, apparently the fish was placed in the wrong spot – did not sell, sold the next day, poor quality equals a poor price.
- He sells his fish unless price is too low, he will cut up fish one at a time and sell it, dry it, or eat it.
- Illegal to sell cut fish; require the fish to be health inspected. Yet, now they require us to gut and gill the fish before we sell it, if the fish is over 20lbs.

- They expect us to gut and gill for fish 20 pounds or bigger and don't compensate for it. Mahi-mahi \$1.80 per/lb. Instead of putting a moratorium on BF, put a limit on commercial catch. For recreational fishermen, we don't even put a dent in fish population.
- Longliners and guys with FADs are pounding fish and throwing off migrational patterns. Dumping on markets, ruins prices for small boat guys who are all local and feeding their families.
- Fair price for fish? From 1970 until now, some prices are still the same. The people he sells to at the restaurants are good people he worked with for 20 years, he uses average, year round price. The auction owner on Oahu owns all bottomfish boats and can still fish.
- Longliners should have a different price of fish than ours because the quality of their fish isn't as good; sits all week while out, we take fish straight to the block but still get same price. If put bottom price on fish, usually don't sell it and then it's too old for restaurants. Have to pay to use a certified kitchen to cut fish for sell, where would make more money than selling it whole.
- Longliners change prices for everyone. Get rid of at least half of the longliners, if there were none, he'd make lots of money.
- Kick out longliners, only locals, no more immigrants so locals can buy houses. Prices drop from longliners.
- Regulations for ice from auction, depends on if you keep fish alive or not. Netting that catches tons of fish depletes resources, more than recovery, big catches offset balance.

Fuel Prices and Ethanol

- Concerned about ethanol in gasoline; he has a fiberglass fuel tank.
- Get rid of ethanol requirements.
- If gas goes to \$5 a gallon, yes I will sell my boat.
- Gas prices are too high but nothing to do, only one gas station [on Lanai] here so they control everything.
- The price of fuel and supplies is so high.
- He is thinking about selling his boat because of gas prices, but fish prices are getting lower. [Fishermen are not able to sell enough fish to offset the cost of fuel for a fishing trip.]
- Diesel prices are too high. Fish prices stay the same...try catch for kaukau. Slow, slow year.

General Costs of Fishing

- It would be a hard living if I didn't have a full time job.
- Going to be a full time fisherman if construction falls through.

Harbor Repair and Maintenance

- Maintenance on all ramps. (2)
- Harbor should be maintained so it's deep enough; Harbor is too shallow.
- Repair harbors.
- Need state to fix harbors!
- Improve the boat ramps. Take better care of us.
- Ramp fees should be used to upgrade ramps, not put into general funds. (2)
- Kapa'a boat ramp, dredge it out, and make it so folks can get out.
- Doesn't think Manele Bay harbor on Lanai was done well. He would like two ramps and two wash-ups.
- Gov. Lingle gave Kapa'a boat harbor money to dredge and \$1.3 million went to the Superferry.

- Most ramps are in horrible condition, the State doesn't care for it. For one of top five spots for large marlin, need to maintain the ramp because it has high economic value. Fees are small and wash area is free. It reeks of misappropriation of funds, everything is broken, and where is the money going? It is so obvious something is not right.
- Storage for boat is a big problem.
- DLNR is going to use land for development right by Honokohau, make a big stink.
- Ramp improvements are getting better. We need better facilities for the average Joe, tourist based businesses.
- Maliko boat ramp on Maui; it has been 3 years since pier was wiped out by a storm and the ramp still has not been repaired.
- License everyone like Alaska, to improve ramps and put money back into fishing management.

Research

- NOAA is doing a good job.
- There should be ahi tagging, to determine if they are they migrating over the years.
- Study impact of foreign longline fishing fleet on the Main Hawaiian Islands.
- Investigate the United Fishing Agency (UFA) catch restrictions on longliners.

Inadequate Data and the Bottomfish Closure

- Everything is closed, more research before closures.
- Don't know if [fishermen are] telling the truth. There is not enough data to make quotas. There is less fish, and we catch more ono every year. Buoys always have a lot of bait. Not good/fair data system.
- Study more of what's happening instead of pointing finger and taking the easy way out. The federal government goes up to the moon; they should study the bottom and find out what is happening.
- Basing Bottomfish Closure off 2004 catch reports.
- Poor Data, say the research shows not enough fish. At the meetings the scientists blame fishermen for overfishing, but don't believe they fish for deep water fish. We'll be dead when trolling is stopped.
- Bottomfish ban, not enough study done. There are areas where fish populations haven't gone up or down since the closure started.
- Bottomfishing is regulated by weather, so there is always fish.
- They do studies that aren't long enough. The ecosystem runs on a longer period; happening with the forests and hunting too.
- The statistics are not close to the truth.
- A lot of the data they are collecting is not accurate. Not using the correct data base to produce final outcome.
- Leave it alone. Let people decide themselves. Almost no one does bottomfishing from May-Sept. Do homework. If you want to conserve, do it during spawning season.

Enforcement

Problems with Current Enforcement

- Can't fish by the Kaneohe Marine Corps Base - there are lots of fish, but they hassle him if he fishes over there.
- Regulations need to be written so that it doesn't create confusion. The regulations are written so it is almost unenforceable, which is not a good way to deal with the situation. Fishermen shouldn't be treated that way, arrested by the Coast Guard. The Coast Guard is limited so fishermen look to try and help each other on the ocean. With the BF closure, the intent is ok, however, when they pass rules, there needs to be some kind of enforcement.

More Enforcement of Existing Regulations

- More enforcement!
- More enforcement of existing regulations.
- Enforce the laws that we already have. (2)
- Hawai'i is way behind as far as fish management, lax. More enforcement for seasonal closures.
- Bottomfish closure is a good thing-->gotta have enforcement. Regulations are good-->need to be consistent.
- Regulations are a good thing, it worked for Alaska. Bottomfishing is getting worse.
- More pressure on longliners and other who rape the ocean.
- NOAA should fund a satellite, aerial targeting of ghost nets.
- There is no tally for bottomfish on the recreational catch. So- no enforcement of Bottomfish closure.
- There need to be more game wardens. Even tourists should be charged to fish and the money should be used to enforce the laws. So many people break the laws.
- They should have people to enforce the rules. If you folks make a rule, enforce it.
- It would be really nice to have more Coast Guard people to see what people are doing. No one watches the divers. Need more eyes so it's safer out there.

Specific Enforcement Complaints

- Shark boats need to stay correct distance off shore.
- Most fishermen have noticed a decline in fish populations and are willing to help conservation. The majority of the people who are losing out are the people who are abiding by the laws. People fish illegally, etc. If the state and feds. are going to implement laws, there needs to be funding put into enforcement.
- Illegal immigrants should be sent home if fishing illegally.
- Don't let foreigners come fish.
- Kapu system is right if enforced.

Regulations

Size Limits

- Limit the sale of ahi to fish over 10 or 15 pounds, so the fish can get bigger.
- Need to ban the size of small tuna for sale.
- Size and weight limits on pelagics
- Limits on size for certain species.
- Raise the size on tunas and don't sell babies
- Release small fish to let grow.

- Minimum weight on shibi, why catch small kine and sell?
- Make bag limit on ahi--> 3-4 of 5 lbs. and 6 of 20lb.
- Make minimum size of some fish bigger; papio, humuhumu, etc.
- They need to reconsider minimum size limits for certain species like papio. The current limit of 16" to sell is kind of big; the public want smaller ones, like 3 lbs.
- Off base on sizing of fish for regulations. Should get rid of scientists and people who make laws. Make decisions based on paperwork and never see fish. Should ask fishermen more.
- Don't make it like the mainland with bag limits.

Kona Crab Regulations and Enforcement

- They don't let you catch female crabs, but there are many female crabs. Enforcement is bad.
- Kona crabs, should shorten season and make it okay to catch females in okay time (most are females so take when they don't have eggs.)
- Having seasons for Kona crab is good; but should not have size limits for home consumption-->4" and male.
- A lot of people take wahine crabs out of season.
- How are Kona crabs are regulated? He catches the same amount annually of some size, but now, he can't catch smaller crabs that eat raw for parties. Sees same amount of crabs here, are they lower somewhere else?

Net Ban

- Ban netting: commented four times
- Pursue a ban on gill netting (2)
- Stop all netting, catching all the baitfish
- Stop the lay netting, catching all the fish.
- Less nets = more fish.
- In favor of a net ban.
- He supports the ban on gill nets; there are too many nets, even though he has one.
- Akule net guys shouldn't be doing that. Let guys from pier catch more fish.
- Feels strongly about getting rid of nets. Regulations to a point are alright. Akule guys, it is their living. Complete closures are no good. For a period of time, open fisheries back up. Fisheries are scarce; folks aren't going out as much, getting older. Akule most abundant but nets are pounding.
- Stop the commercial netting of fish in bays. Akule boats net big schools, it's not good. Fish come into spawn and are swooped up, no babies being born.
- Netting catches tons of fish and depletes resources.
- Lay net ban pretty silly, no sense to even do it.

Catch reports

- Forms are excessive, real hassle.
- Recreational fishing licensing with reporting for reef fish.
- The amount of paperwork is too much. Reduce the red tape and make it less redundant.
- Tired of reporting every month.
- Fish report should be quarterly, not every month.
- The only way to get an accurate report is to be there every time, at the markets.

- Not opposed to regulations. Fish reports are totally bogus. The fishing/fantasy cops have too many regulations and harass fishermen. He is fed up with the hassle of reporting. It makes him feel like a criminal, if he forgets to file a report, he just says he didn't fish, everyone does it. They will deny him his license if you submitted all your monthly reports. Senseless harassment.
- Catch reports are good.

MHI 'Deep 7' Bottomfish Closure

For

- Bottomfish regulations are a good idea. (4)
- Bottomfish closure is a good thing-->have to have enforcement. Regulations are good-->need to be consistent.
- Has no problem with bottomfish closure, should have been done a while ago.
- Expand 200 miles. Bottomfish regulations, good in a way, [the fishery is] not getting any better.
- Regulations are a good thing, it worked for Alaska. Bottomfishing is getting worse; purse seines are the bad ones.
- Bottomfish closure was a good idea. 29 years in Kona I've never heard of Opaka'paka management.
- In order not to destroy resources by over fishing, catch rod and reel one at a time. Not bringing in tons of fish. Regarding bottomfish closure, should regulate small boat guys, 1 or 2 out of this ramp.
- Mixed feelings due to bottom fishing closure, which is a major source of income, but it's good to save fish because there is less and less fish. However, fishermen need another way to cover costs, we're losing money.
- Bottomfishing should be closed, the fishery is really depleted. But he feels for the guys who make a livelihood out of that.
- The Bottomfish closure is a good idea. But get rid of imports.

Against

- Revise the bottomfishing regulations and closure.
- Basing Bottomfish closure off of 2004 catch reports.
- BF permits seem to be on boats not in water, 8 month wait.
- BF being depleted, shooting in the dark. Older guys have to bottomfish, can't go now.
- Bottomfishing, it's stupid that they closed the season.
- Look at trappers, will bottomfish and catch but the traps are working 24 hours/7 days a week and seem unregulated.
- A lot of the data they are collecting for the Bottomfish closure is not accurate. Not using the correct data base to produce final outcome.
- Why is there a Bottomfish closure? Dolphins and sharks are predators and take opakas right off the line. Ta'ape are eating all the opakas.
- The Bottomfish closure is bothering him. This fisherman is a state guy and would like to see stock assessment and state monitoring.
- BF Closure is not good. Really cracking down on BF. They didn't do enough research. The past 3 years, the sharks were horrendous. I couldn't get my fish past the sharks. There is no tally for bottomfish on recreation catch, which means no enforcement.
- Instead of putting a moratorium on bottomfish put a limit on commercial catch. For recreational fishermen, we don't even put a dent in fish population. Last year wasn't a good year. Ahi- for those that caught, they were going 30-50 miles out. The Bottomfish closure definitely hurt us.
- Rules are good. On the North Shore, the weather regulates the bottomfishing, can only go out at certain times.

Bottomfishing Closed during the Wrong Season

- Leave it alone. Let people decide themselves. Almost no one does bottomfishing from May-Sept. Do homework. If you want to conserve, do it during spawning season.
- Closure on BF is five months, which won't make a difference because it is not enough time for the fish to come back. If you close something, need to do it for 1-2 years. Then see if it makes a significant change. After ban ends, demand will increase and source will deplete again. Need to have longer ban than five months.
- When they closed the bottom fishing in May, no one fished anyway. The fishery needs to be closed for one year when people fish from October to March. There also should be a lottery, "this month you can go fish." If you have commercial fishermen, pay higher license fees and have to abide by the rules.
- Bottomfish closure isn't doing any good right now. It's not going to make an impact, useless, closed in wrong season. He is all for closures, they just need to be at the right time.
- Lived here all his life and....but their approach to bottomfishing and coastal areas is off. Need to shut down fishing in certain areas for two years. Then reopen and shut down new area. Could make fishing only on certain days. Let fish grow to maturity. Bottomfish will catch in four months, so it needs to be shut down longer. Eliminate fishing in areas that have been hit really hard such as the reefs and harbor.

Ta'ape Concerns and Marginalization of the Small Boat fishermen

- The state brought in the Ta'ape and pick on the small guys and still allow the big boats to fish. The depletion of the bottomfish from the Ta'ape is really sad, that is where the state really screwed up.
- Bottomfishermen are a dying breed, need more breaks. During Bottomfish season, tons of Kakaula, Ta'ape ate the babies of baby bottomfish. Full time getting screwed by part time. Treated same during open season, during the closure, they have jobs to go to.
- Upset about bottomfishing being closed and closing certain areas. Would like to see areas opened up. Should regulate larger commercial vessels, not the small boat guys.
- Bottomfishermen are getting screwed. We only fish with a hook and line, how much can we catch? Why are we getting punished? Everything has cycles, tides. Ta'ape, perch the state brought in. Season closure is ok, quota is no good. Should open up areas. Feds stay out of the state.

Northwestern Hawaiian Islands

- If they are going to close the Bottomfishing, close the entire state, including the Northwest Hawaiian Islands (NWHI).
- Open the NWHI to fishing and eliminate the Bottomfish ban.

General Closures

- Shouldn't shut down all fishing areas, manage, don't shut down. Kona reserves are off limits, no access so rights are limited.
- In a way, closing fisheries is good, in a way, it's bad, but we have to preserve fish for future.
- You are doing a good job. Figures are not accurate, closures are good (Kaena pt.) current so bad on this side, not like the banks. Leaving rec. fishing out, just as much expense as all commercial. Commercial fishing guys out. Cool to report catch, bag limits are stupid.
- Do seasonal fishing with big fish.
- I'm for closures, to open at a later date.

- They like stop fishing altogether. Fishing shouldn't be stopped, just the bottomfish, not the ahi. There were more ahi than ever last year and it should never be stopped.
- Longer, rotating closures would be better than seasonal closures - 5 year cycle where 4 years it is open than one year it is closed.
- Keep closed areas closed
- Put effort in wrong place; trying to control the deep instead of protecting coastline.
- Maybe the regulations are good for grandchildren, but then we can't get food.
- More regulations regarding pelagics, gotta make money, not much fun.
- Opelu and uhu kept us going during the BF closure.

Monk Seals

- Monk seals are not native and will be a problem. They should be controlled.
- Upset about DLNR, Monk Seals on Molokai, worse than Ta'ape; consumes so much fish and out dives us. Hawaiians in old days saw them as competition and ate them.

FADs

Illegal FADs

- He is upset about people that set buoys. They say it's illegal, and then the fish don't come to the FADs. That's how all the fish get wiped out. They say it's too much money to clean up illegal buoys.
- Guys with [illegal, or their own] FADs are pounding fish and throwing off migration patterns.
- They should follow these guys that have their own buoys and cut them off. There has been a big drop in ahi because of these buoys. People spend \$30,000 on buoys. It ruins it for everyone. 15 years there has been a major drop in fish. The FADs are different now, they don't hold fish.

Commercial Aku boats

- Commercial aku boats run tight circles around the FADs which disrupts others' ability to fish.
- The aku boats come to the buoys with 50' boats and are depleting the buoys of fish. Don't allow the aku boats at the buoys. There should be a limit on where they can fish, not so close to shore to allow small boat people to make money.

FAD environment, regulations

- More buoys. Mentioned four times
- Catching at buoys (30-40 boats at a time) should be regulated.
- Create more of an environment for creatures to live, more surface area for algae.
- FADs need streamers.
- Make them last longer.
- FADs worked better with streamers 10 years ago (now banned). They need to put something similar otherwise they don't work.
- Push buoys out a little further because some are unproductive and the ones they have pushed out (FF, Q) produce better results.
- Buoys too far apart
- Buoys always have a lot of bait.
- Get fishermen to stop tying up to FAD and breaking it loose.
- They used to put a net underneath for small fish. The FADs don't work now without the nets.

Management

- Stricter management
- Should have had better management 20 years ago to still have fish today. Management acted too late, limit catches, close seasonal times. Hawaii is getting over fished. Close six months to allow fish to get bigger. It's too late now.
- The depletion of bottomfish from the Ta'ape is really sad, that is where the state really screwed up.
- Shouldn't shut down all the fishing areas, manage instead of shutting down. Manage allowing a person to take only a few of each fish.
- Tell the doctors who make the regulations to go fish themselves before they make the rules. Close it with our info, (just like yourself) 90% of scientists don't fish and get livelihood from our info.
- Good job managing longliners. But who is policing the 100 mile limit?
- Reunite fishery management.
- Is there any management?
- The porpoise on South Point tend to the fishery better than any agency. Never been over fished, the government doesn't understand.
- Hawaii is way behind as far as fish management, lax.
- They don't manage anything and they should. The say small fishermen are taking all the fish and have documentation why they should manage.
- I think they should license everyone, like Alaska, to improve ramps, put money back into fishing management. There need to be more game wardens. Even tourists should be charged and use the money to enforce the laws, so many people break the laws. A lot of people take wahine crabs out of season.
- Ten years ago, the Council made volunteer closings and promised they wouldn't come down on fishermen, but did. Small boats aren't over fishing to get shoved around, but money walks. Individual quotas for tuna would be ok, but not doing total and fleet. Education is more important than laws.

Fishermen's Input

- Should be managed by the fishermen.
- Should be managed by local people who know industry and not someone from Michigan or Costa Rica. They read books and think they know but don't, high paid welfare recipients. Talk to fishermen not scientists. Fisheries shouldn't be left up to President Bush.
- Get rid of scientists and people who make the laws. They make decisions based on paperwork and never see fish. Ask fishermen more. Off base on sizing of fish for regulations.
- Change department heads, they only look at numbers and aren't fishermen.
- Need fishermen to be in charge of fisheries, don't go to Wespac.
- Lies come from the top down. Put fishermen in management to figure things out. There was a moi cage in Oahu, the State said they would turn the fish loose, but instead they turned around and sold the fish.
- Talk with people who have been here to see what fish used to be in the area.
- Should send reminders about website, where we can leave feedback throughout the year, not just once a year at the ramp.
- Need to talk with fishermen more instead of just using catch reports. The info isn't the same.
- Need to publicize fishery meetings much better.

- More fishermen should be on the council and fewer people who don't know what's going on. It's politics. Have meetings in Honolulu but doesn't apply to all the islands. Need to work closer with fishermen, place by place, not the whole state.
- As far as licensing, needs to be negotiated between fishermen, with fishermen's input. If you shut us out, there are going to be distraught people.
- Clowns in state, get someone who actually knows how to fish.

Community

- For question 37/38: "On avg. what % of the fish you catch does you and your family consume? And; is the fish you catch an important source of food for you and your immediate family? He said it really helps, 1 or 2 fish a week, the food bill does go down.
- Is the fish you catch an important source of food for you and your immediate family? He said the fish his family eats is the "only food we eat."
- Bothered by net fishermen who scoop up whole balls of opelu.
- Most of the bottomfish we catch is to feed our families.
- Don't know if fishermen are telling the truth. Fishermen are not going to cooperate, fishermen are the worst guys, cheating, cut throat.
- Charter boats will give bad names for biggest catch, fishing for sport which is wrong, should be for food. Hook and line fishing is more selective. Even longliners are better than purse seines. Don't be hypocritical, everyone pollutes, we all flush the toilet and eat canned tuna and want to eat fish.
- Full time getting screwed by part time fishermen. But are treated the same during open season, during the closure, they have jobs to go to.
- Hawaii will end up like California where it's too expensive to fish and so particular (no BF, etc.) so that only the rich guys with full time jobs can afford to fish and no one will do it for a living. Molokai should be excluded from all other boats from other islands. Only 7,000 people live here, who subsistence fish and homestead; and so blanket fishing laws shouldn't apply to this island. Regulations are not specific to islands. He recognizes that the industry is being terminated for political reasons, closed by 2011. He thinks all commercial fishing will be closed and restricted to charters because there is more money in it. Small guys "just feed families." The stats for the closure are from 1988, most boats go bottom fishing over the holidays and not during the summer. 15 guys go in the summer vs. 100 boats in the winter.
- Leaving recreational fishing out, just as much expense as all commercial. Commercial fishing guys are out.
- Should be able to catch for personal consumption.
- The guys catching the most, lie the most.

Traditional Culture of Fishing

- Make a little money, great; but fishing is for a cultural reason.
- This is a culturally unique spot. Need regulations, but not so much that it stops fishing.
- Kona reserves are off limits, no access so rights are limited. Hawaiians need to eat fish, food culture that can't be taken away from us. People who are trying to take this right away are from out of state. They do studies that aren't long enough. The ecosystem runs on a longer period; happening with the forests and hunting too.

- Why did they take away the NWHI sanctuary from recreational fishermen? Trips to the North West Hawaiian Islands were spiritual and religious. We would go once a year, come back and give to friends and coworkers.
- Re-open the NWHI for Hawaiians. Fishermen from the mainland came and raped the place, huge trawlers have no ethics. They come down from the mainland with high tech boats and take all they can and as much as they can. When they closed the NWHI down, it's for everyone; locals should be able to fish it. I'd like to see the local Hawaiian fishermen be able to continue gathering rights with minimal restrictions. The laws passed down makes us feel like we're getting shut out of our own home.

Disenfranchisement

- It doesn't matter, if they want to close it, they close it.
- It doesn't matter; they are going to do whatever they want anyway. No matter what we tell them to do.
- Said nothing would happen if he commented
- No can do nothing anyway.
- Why are we getting punished?
- Shut down NWHI but still have people up there with license. This is not fair. I'm a local fisherman but can't get a license. If they can fish, they should let us fish. Trying to control everything, not like before where we bought only one license.
- Why are fishing regulations affecting small boats?

Miscellaneous

- pollution, water quality, in between 10-15 green water
- Most of the time this season was closed. Not a fair assessment because most of the year has been closed. I think the closure should be done and is a good thing. It's to preserve the species. My question is, where are all the small fish along the shore? If you take away the food chain here, no more bottom fish. It's the pesticides that golf courses use direct relation to lack of fish. I would like to see more restrictions on the pollutants from industry and golf courses. We used to catch so much fish; we used to catch 1,000lbs. of opaka'paka in one night. You couldn't stop the decline. No regulation on chemicals, every area from here to Waianae, outside the golf courses is sterile. Regulations need to be written so that it doesn't create confusion. The regulations are written so they are almost unenforceable; not a good way to deal with situation. Fishermen shouldn't be treated that way- arrested by Coast Guard. Defined restricted zones- if property was all...doesn't understand the logic. This creates a lot of unnecessary stress and un-cooperation between state, fishermen, and so on. The university has to play a very important role, and it has to be industry as well. A real viable bottom fish industry for Hawaii would have fresh fish from Hawaii not Samoa. It's a shame it can't be resolved, the intent was good. We have a very fragile marine environment, how will they go about preserving the environment? The funding should come from the University and then down through the state. An active industry that supports the fishing industry in Hawaii can make an impact, there needs to be more dialogue. J, G's friend had some comments as well: We thought that after the six month closure, we would get bigger and more fish. We hardly caught any fish after the lift of the closure. I think the chum brings out small fish, they are not going for chum. It could be that no one from the state has asked the fishermen. The closure is a fine thing. The state is not doing us right by closing a wide area. May be good for grandchildren but then we can't get food. I assume we would have larger fish, but there are none. Before the closure, always looking forward to the

weekends. Now, with the closure, we don't even get excited about the weekend. A suggestion: Mahi-mahi is eating all the fingerlings. UH is raising mahi-mahi to release in the wild. This is the worst idea and definitely needs to be stopped. The mahi-mahi will eat all the moanas.

- Allotments need to be made in order for guys with gas motors to be subsidized.
- Don't know if [fishermen are] telling the truth. Need subsidies like farmers.
- Even the aku boats come in and catch all the small aku. Catching thousands of pounds of aku, inside-close in.
- Works in a super market, gets opaka'paka from Australia and has to throw it away all the time because it expires. No one buys it because they know the fish is not local. The bottom fish closure will hurt the economy.
- Most fishermen have noticed a decline in fish populations and are willing to help conservation. The majority of the people who are losing out are the people who are abiding by the laws. People fish illegally. You would think, we are surrounded by ocean, there would be greater conservation.
- Ramp fees should be used to upgrade ramps, not put into general fund.
- Today, there are hundreds more fishermen than 20 years ago, with better gear and equipment. It's just the same as way more cars and people on the islands than 20 years ago.
- Don't hit us with an excise tax and develop more quality services for visitors to have fun.
- Never make like California, not a good idea.
- been going to meetings about over fishing, so it'll take a while to see results of ban. NOAA does a great job.
- Don't hit us with an excise tax and develop more quality services for visitors to have fun.
- Lots of charter boats from Maui, should get rid of them.

Fishermen's Comments and Suggestions by Motivation: Recreational

Longline Concerns and Regulations

- Try to keep longliners out.
- Get Japanese long liners out, circle island chain.
- Longliner fishermen, big boats from town side should stay outside. Leave the fish on inside for small boats. Long line fishermen should be residents to fish inside waters. Need to minimize catch of big boats.
- Really crack down on longliners- small boats don't catch much, we just like fishing.
- Maybe they should control and regulate the longliners
- Limit longlining.
- Regulate long liners.
- get rid of long liners
- Get the longliners out, taking more than their share.
- No longline in Hawaii, it's depleting resources.
- Stop longlining, regulate more.
- I feel that they should put limits on longliners.
- Control the tuna boats.
- Too many longline boats. Fishermen have better chance with fish and pole. Longline boats catch anything and cause a decline. You don't see fish spawning anymore. For a troller, catch after spawn, but longline boats catch whenever. If they keep catching small ones, there won't be anything left.

Fish Marketing

- Ban the sale of opihi. (3)
- Ban selling of all fish because once money is involved, overfished.
- Get rid of peddling juvenile fish on side of road.
- Limits on the size of fish that can be bought and sold.
- Mandating fishing closures drives up fish prices. Target commercial not recreational. Have to feed family but chicken meat is genetically modified. Hawaii commercial fishery should have market paid by state.
- Fishing is not a viable livelihood. Nobody goes to Maui; fishing population is mostly part time, two active full time, one retail market. Only two fishermen, worst thing about Lanai, limited areas to sell, hotel, no where to get rid of fish. The hotels turn away fish unless they need. No chill plant you can't get rid of it. The price of gas has gone up. On the weekend you'll usually find 6 boats. Charter guys only that can afford to go fishing. Get Maui fishermen out of Lanai waters, big boats come out and clean waters out and weekend guys are left. It is hard to get out to buoys if it gets rough; 5-7 miles out. Tough for small Lanai guys.

Fuel Prices and Ethanol

- His boat broke down today at noon. Probably from using ethanol gas.
- Sell ethanol gas separate so it doesn't ruin the motors. If the motor stops out there, you have to wait hours for someone.
- Fuel costs fluctuate too much which would dictate when to sell boat. If the fuel costs get too expensive, it would not be feasible to go fishing.

Harbor Repair and Maintenance

- More ramps and facilities.
- Get some boat ramps, no place to put the boat in.
- Need more harbors, more places to get boats in the water.
- For Lanai, the main concern is the condition of the harbor, pier is falling apart and the dock needs to be fixed. Some days, ten guys want to go out but have to wait one at a time. Ramp fees were raised 100% to \$50.
- Need to fix dock at ramp. Ramp is also too narrow.
- Manage harbors better, poor facilities, overflow parking. Ice heads hang out at ramps. There is no enforcement.
- Keep harbor taxes separate from general fund and use for harbors, conservation, and education. That's how Hawaiians used to do it and should still do it.
- Need to dredge ramp, ramp facilities.
- More parking at Maalaea, no room for local folks.
- Improve ramps.
- Four year wait list for a slip.
- They haven't dredged Kapa'a in years. I have to drive all the way here [to Nawiliwili]. Dredge it! Make it accessible. The harbor is disgusting. There is no regular gas available in harbor and a 30 year wait for a slip. Make it easier for larger boats to go out of Kalihi.
- Manage harbors better, poor facilities, overflow parking. Ice heads hang out at ramps. There is no enforcement.

- All the harbors are in the worst condition you could ever see. Look at the marina in Waialua. It's a shame. Put money into the harbors because that's where the visitors go.

Research

- Before they start shutting down and closing fishing, there should be a study done. There are plenty of fish. Whose pockets are getting padded? It's all political. Do more research.
- Likes what is going on with studies on bottom fishing and the ban. We are going to run out of bottomfish so all for ban.
- The studies don't seem to have an effect.

Enforcement

- Need to regulate what's going on. Commercial guys were bottom fishing and not enforced;
- Big government, too much regulation. So much regulation and no enforcement. People going out illegally.
- There are a lot of regulations but no enforcement. There is a lot of ground to cover, don't bother the recreational fishermen.
- Should be a charge for recreational fishing license like all the other states so can hire more enforcement and NOAA folks.
- If they pass regulations, they must be enforced. You never see wardens around here. A law is meaningless without enforcement.
- More enforcement.
- More conservation officers, DLNR, people with wrong size lay nets are catching too much. More conservation officers in land locked states than there are here, it's embarrassing.
- Should enforce more.
- Higher user fees to pay for more enforcement and better tracking of resource utilization.
- Need more regulation of shoreline fishing, more than two game wardens.

Regulations:

- Get rid of ta'ape.
- Keep people from fishing. Kapu works!
- Big government, too much regulation. So much regulation and no enforcement. People going out illegally.
- Regulations are good.
- I don't understand regulations but friends who do akule fishing are feeling them.
- Don't know if you can regulate anymore than already regulated. It's the longliners.
- Seasonal fishing/crabbing is a good thing. Later time and season for crabbing was a good idea because the fish need to spawn.
- All good

Fishing Licenses and Catch Limits

- Should be like mainland where you need permits and licenses.
- Fishing licenses for everyone: local (cheaper) and tourists. Use that money to rebuild fish stocks.
- Stop fishing in certain areas for a time, one year. Then reopen. People will cooperate. The hell with Hawaii, so upset, move to Costa Rica with regulations. State/DLNR is a fucked up agency.

- He's for less government, but foreign governments/boats come and over fish. Lived in California previously, which had strict catch limits, which would be good in Hawaii.
- Just moved here from Seattle where they have limits and punch cards. But he doesn't know enough about Hawaii, heard it's fished out.
- Should have a salt water license and put the money from the license back into the fisheries management.
- Spearfishers out at buoys. There should be fishing license. Alaska subsistence fishing, go out and eat what you catch. There should be regulations like this.
- They should regulate fishing, raise the licenses or tax each fish that is caught.
- I believe in salt water fishing licenses and bag limits.
- I think there should be catch limits and better tracking of resource utilization. DAR needs to be involved with the Super Ferry and the impacted island resources.
- Manage resources of bait fish up to big fish.
- I think there should be catch limits.
- Should be fishing limits and size limits for non pelagic fish.
- Pelagic catch limits for non-commercial fishing.

Commercial Fishermen

- Regulate commercial fishing more. Now want to regulate recreational fishers because of depleting resources. Why regulate recreational guys? We give away most fish, the old Hawaiian way.
- Everything is overfished, not going to get better. Can't stop Maui boats. New rule: charters taking tourists should catch and release. Lanai depends on fish you catch to eat or supplement income. Limit catch by weight and number with bag limits. Westpac regulations not a benefit here. Technology makes it too easy. Used to need skill.
- They are really loose on the longliners and gill net regulation- Not species specific. Need to loosen up on regular guys and crack down on big guys (currently non-discriminatory).
- Keep all the commercial fisherman 1,000 miles off shore.

Net Ban and Trap Fishing

- Gill netting should be banned. (2)
- Gill netting should be totally banned from state.
- Do away with netting.
- No lay nets close to shore in Nawiliwili.
- Lay nets and Bottomfish rules are good.
- The way they preserve fish with the lay net ban is a good idea, kapu.
- Close certain areas of the island for 1-2 years, no gill netting, no trapping, no long-line in Hawaii, all are depleting resources, no spearfishing at night (only lobsters). Lanai doesn't close any beaches to let fish populate. Netting is a big issue.
- Stop fish trapping and surround netting. It's totally unregulated and killing it. People think making closures is the answer, but the answer is to stop trapping.
- Net fishing is one of the more destructive fishing practices to the propagation of fish species, indiscriminate netting.
- Glad to see what they're doing with the nets.
- People with wrong size lay nets and catching too much.

Bottomfish Closure

For

- Pretty good job managing the fishery resources. The bottomfish seasonal closure is a good idea.
- Likes what is going on with studies on bottom fishing and the ban. We are going to run out of BF so all for ban.
- BF rules are good.
- Need to regulate what's going on. Commercial guys were bottom fishing and not enforced
- Bottomfish closure is a good idea; make it during the summer when hardly anyone goes.
- I'm glad they cut down bottom fishing, that's a start. Should have done it a long time ago. Should be like mainland where you need permits and licenses.
- Doing a good job with the Bottomfish management. Have more fish when we need. Seasonal closures are a good idea.
- Bottomfish regulations are good, necessary. The big problem is foreigners catching fish. Regulations are good.
- They're trying their best on bottomfishing.
- Bottomfish closure helped.
- Bottomfish closure, no worries.

Against

- Stop closing up everywhere for Bottomfishing, he just got electric reels for the first time.
- The only thing I disagree with is bottomfishing. I don't think they should have banned it completely. Not completely, not to recreational guys. Where we fish, we hardly catch anything anyways.
- When shrimp industry went down, Hawaii helped convert the Vietnamese and other boats to long line boats with new techniques. (different depths of hooks) He noticed big impact on pelagics. He thinks they do that with bottom fish too.
- Don't know why bottomfishing was stopped because the fishery is not fished out, sharks eat most of them.
- Not a good idea to close bottomfish. Just bought the gear to start bottomfishing, but has to wait now. Has had a CML for 13 years, reports his catch, but never sells.
- The bottomfish ban kind of sucks - go for eat, don't sell.
- Bottomfish closure is a bad idea, really unfair, that's a way of life. Start hatcheries rather than shutting it down.
- Has concerns about the bottomfish closure, but doesn't want to get into it.
- Bottomfish closures, more and more closures. Just seasonal, no need for area closures along with seasons. Rotating area closures would make everyone happy.
- Doing a good job right now. But the Bottomfish closure is only open during winter and it's too hard to go.
- I would think the levy on regulations to stop Bottomfishing. I think they should not affect the small timers. At least allow one or two for the family. Give me a break, I'm not overfishing.

General Closures

- Closures but not total closures.
- Ban trolling for a few months, it would help bring fish populations back up.
- Start closing certain areas and banning lay nets. Work on fishery management act for 2011 (closures).

- Should make protected areas on Hamakua Coast where no one goes or can get to, the small boats, and it's too rough.
- If they are going to close off areas for fishing, only close off certain sections. Rotate signature from Lihue to Port Allen for three years then...switch. Not fair to fishermen. Charter boats take up too much space, should park someplace else. Should have more control on areas that are closed. Lihue is the only deep harbor for large boats.
- Likes the closing of fisheries to bring populations to recuperate
- Kilauea Point became federal, run like their own little castle and won't allow public to come. It's good to preserve the fishery but if you're going to preserve it, you must allow the fishermen to still fish. Don't over preserve the fisheries. Don't lie to the fishermen. Kauai BF closed and told they would re-open in five years, it has been 7 years.
- Close certain areas of the island for 1-2 years, no gill netting, no trapping, and no long-line in Hawaii, all are depleting resources, no spear fishing at night (only lobsters). Lanai doesn't close any beaches to let fish populate. Netting is a big issue.
- Closures such as the Natatorium- no fishing allowed; have sections throughout island- designated to protect shore fish. I know a lot of people would be upset but they can just fish somewhere else.
- Seasonal fishing/crabbing is a good thing. Later time and season for crabbing was a good idea because the fish need to spawn.

FADs

- Get rid of the FADs, everyone is getting the babies.
- Get rid of FADs
- Need more buoys where MC buoy was, only NASA buoy has fish and it isn't a FAD.
- Commercial aku boats fishing inside buoys, fishing buoys.
- Losing FADs but they replace them.
- Put out more FADs and up near Puakoa'a should moor the FADs in deeper water, 600-700 fathoms. He doesn't like driving to Honokohau or Hilo.
- Closer buoys for the small boat guys.
- I suggest they put more FADS on this side of the island and more artificial reefs as well. That is part of the reason this side is so dead.
- He is against the FADs; it's like fishing in a bucket, picking off all the small ones. That is what FADs attract and it kills the population.

Management

- Fish management releases papio/kahela---> being fished out.
- He has been to meetings and NOAA has their mind made up already.
- NOAA is political and mind is always made up as for policy.
- I think it should be managed not by a group of people but by the community. Hawaiian locals, don't voice our opinions because we're not heard.
- I think they're doing a pretty good job.
- Fisheries manage themselves.
- The fisheries need to be managed, no fish anymore. It's depressing.
- NOAA and DLNR should work together to solve something.
- Main concern is getting rid of long liners, out of Hawaii. NOAA should manage the fisheries, not the state. If have to have long liners, NOAA should manage, not DLNR.

- I really appreciate what you guys are doing. It's been fished out here for so long. It's good you do...It needs to be better managed, put restrictions on certain fish, more fish. When fish are spawning, people fish and I have seen the population go down in the last 20 years. This should be restricted, we fish seasonally for certain fish.
- We were all free, now you guys come around and ask all these questions. I spent plenty of money to come in this place; you don't catch the guys that make trouble.
- Whatever they do, we have some people out there fighting for the cause.

Fishermen's Input

- Listen more to fishermen than scientists.
- I think it should be managed not by a group of people but by the community. Hawaiian locals, don't voice our opinions because we're not heard.

Traditional Culture

- People out of area making rules, not considering Hawaiian culture and heritage. Such as Coast Guard boardings.
- We are Hawaiians, we own this, Hawaiians were the smartest, they made fish ponds, now the fish don't come in, and they stop everything.
- Now want to regulate recreational fishers because of depleting resources. Why regulate recreational guys? We give away most fish, the old Hawaiian way.

Environment

- Would like to see the results. The resource is not infinite; it's finite and will run out. It's a global issue.
- Use hook and line so catch a few but don't deplete the resource.
- More reserves, wants to start one in McKenna, who does he talk to?
- DAR needs to be involved with the Super Ferry and the impacted island resources.
- Lost of dolphins today. Dolphins--> regularly, no fish because of dolphins. No catch today

Disenfranchisement

- Makes no difference, as long as I can go where I want and catch what I want. Dolphins in area-->no bite.
- Hawaiian locals, don't voice our opinions because we're not heard.
- They will do what they like.
- Fishermen have no choice.

Miscellaneous

- Keep a good eye on it...guys that sit out on the buoys.
- Ban charter boats from Maui. Not too bad if kept outside but come to shore for shoreline fish.
- It's the honest guys that get hurt.
- No concern with fish but charter boats seem to think they own the ocean and it's hard to pass them without getting a look. Incident in past where charter boat cut him off.
- A little overcrowding on the weekends. Keahou Point- 3 big nets, fish traps, kona kempache- brings a lot of sharks around.
- I heard we're starting to get some trouble down in Hononau and Milali'i. I hope they can resolve this in a civilized manner.

- Everything is overfished, not going to get better. Can't stop Maui boats. New rule, charters taking tourists catch and release. Lanai depends on fish you catch to eat or supplement income. Limit by weight number catch, bag limits. Westpac regulations not a benefit here. Technology makes it too easy. Used to need skill. Hi boat has no capacity, some cooler off island folks have huge bait boxes. Fishing is not a viable livelihood. Nobody goes to Maui; mostly fishing population is mostly part time, two active full time fishermen, one retail market, can't fish the channels, Kahoolawe. Only two fishermen. The worst thing about Lanai is the limited areas to sell, only hotels, no where to get rid of fish. The hotels turn away fish unless they need. There is no chill plant and you can't get rid of it. The price of gas has gone up. On the weekend you'll usually find 6 boats. Charter guys only that can afford few years ago with good fishing, maybe dozen. If get Maui guys out of Lanai waters, big boats come out and clean waters out and weekend guys are left. Get out to buoys if it gets rough 5-7 miles out. Tough from small Lanai guys.
- It's not real crowded right now, nothing serious.
- Just catch what you eat.
- Ko'olina closure is not high pressure, low key, exclusive. Lawyers can do anything. The city licensing/permitting lady is the head of Ko'olina. Agriculture land changed zoning to resort. Recreational, industrial zone area next to propane tank.
- Ban Superferry, let them stay on own island and fish.
- We eat fish once or twice a week. We fish because we like it.

